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Flow diagram software freeware

BORIS BORIS is an easy-to-use event logging software for video/audio coding and live observations. BORIS is a free and open-source software available for GNU/Linux, Windows and Mac OS. version 8.0.9 www.boris.unito.it Copyright 2012-2021 Olivier Friard - Marco Gamba BORIS is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2, or any later version. BORIS is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details. BORIS can be installed following instructions on the BORIS site at download page All previous versions of BORIS are available in the Releases section of the GitHub repository BORIS can run on various Linux distributions including Ubuntu, Debian, Raspberry Pi OS, Chromebook …). See the BORIS for Linux page to install BORIS for Linux. BORIS is available for 64-bits Microsoft-Windows 10. See the Download BORIS for Microsoft-Windows page to install BORIS for Windows. Two versions are available: BORIS Portable and BORIS Setup BORIS v.8 is not available for MacOS for now. Start BORIS by clicking on its icon. For launching BORIS from sources see the BORIS web site. When launching BORIS for the first time it may take some time to show up. Please be patient! The main window of BORIS will show up. The toolbar with media player commands is disabled for now. Warning On Mac OS 10.9 and above, launching can be stopped according to the Security & Privacy settings of your computer. They can be changed opening System Preferences… > Security & Privacy > General and selecting the option Anywhere in the frame Allow apps downloaded from. Alternatively you can repeat the operation right-clicking on the BORIS icon and then clicking Open in the following two dialog boxes. Warning On Microsoft-Windows, launching can be stopped by a Security warning: The publisher can not be verified. Are you sure you want to run this software? Click the Run button to launch BORIS. At the first launch, BORIS will ask you to allow the automatic check for new version. Internet access is required for this feature. If you choose Yes BORIS will check for new version about every 15 days. This option can be changed on the Preferences window (See general preferences) You can launch BORIS from command line by specifying the project file to open: start_boris -p MY_PROJECT.boris The BORIS project file is the container for all information related to the project. It contains the ethogram, the independent variables, the subjects definition, the behaviors coding maps, the converters and all observations data. The save menu option (File > Save project or Save project as …) will save the project in a path in your local file system. You can also activate the automatic backup feature (see Preferences). Note It is EXTREMELY important to do regular backups of your project files to prevent the lost of data. Software can be reinstalled but your data could quite possibly be lost for ever. BORIS allows creating an unlimited number of projects but only one project can be opened at a time. A video tutorial about creating a project is available at To create a new project, under the menu File , select New project. You can determine your project name by writing in the Project name field in the Information tab. Once the project will be saved, the Project file path will show the full path to your project file. Date will automatically set on the current date and time, but you can alternatively set this info on your media date and time, or whatever you prefer. Description can host all the relevant information about your project, can be also left empty. Time format can be alternatively set to seconds or to hh:mm:ss.mss. This choice can be changed at anytime under File > Preferences (for MacOS users, BORIS > Preferences) > Default project time format. See for ethogram definition. Switching to the Ethogram tab, you can alternatively: Clicking on the Add behavior button you can add a new row in the Ethogram table and behavior type will be automatically set to Point event. The cells with gray background can not be directly edited. You must double-click on them and then select a value. 2 types of behaviors can be defined. Double-click on the cell and select the type of behavior: Point event behavior when the behavior has no duration. The behavior will be coded by pressing the defined keyboard key (see below) or by double-clicking to the corresponding row in the Ethogram table. State event behavior when the behavior has a duration. The behavior start and stop will be coded by pressing the defined keyboard key (see below) or by double-clicking to the corresponding row in the Ethogram table. These behaviors must have a start event and a stop event otherwise an UNPAIRED events warning will be reported when you will close the observation or during an analysis You can switch between State event and Point event at your convenience with a double-click on the Behavior type cell. You can also add a Coding map to either a State event (State event with coding map) or a Point event (Point event with coding map; see the "Coding map" section for details). An existing behavior can be duplicated using the Clone behavior button. Its code have then to be changed. On a selected behavior, click on the Remove behavior button to remove. The Remove all behaviors button will clear the Ethogram table. Both the above-mentioned operations must be confirmed when prompted. Behavioral codes (Code column) can be sorted alphabetically by checking the Alphabetical order checkbox. Alternatively they can be sorted manually by using the Move up and Move down buttons. Defining categories of behaviors can be usefull for the analysis of coded events (for example the time budget analysis). Click the Behavioral categories button and add a the categories of behaviors. Behaviors can then be included or not in a defined category. For each behavior you have to set a keyboard key (Key column) that will be then used to code the behavioral events. You can choose whether you want to set a unique key for each behavior or use the same key for more than one behavior. In the case you set the same key for more than a behavior, BORIS will pause your coding and ask which of the behavior you want to record. From version 7 the keys are case-sensitive. If your project was created with a previous version of BORIS (< v.7) you can use the Convert keys to lower case to convert all keys to lower case otherwise you will have to code your observation using upper case key. Important If you open a project file created with a version older than v.7 BORIS will ask you to convert the upper case behavior and subject keys to lower case. Important Do not use the / and * keys! They are reserved for the frame-by-frame mode. In the Code column, you have to add a unique code for each behavior. Duplicated codes are not accepted and BORIS will warn in red about duplicates on the bottom left of the Ethogram tab. The code can be an alphanumeric string (which must not include the pipe character |). The Category column allow you to include the behavior to a predefined category. The Description of your behavior is optional. The Description column can be useful to add information about a specific behavior, its characteristics (e.g. to standardise observation between different users) or to refer to external information (e.g. reference to a previous ethogram). The following three columns (Modifiers, Exclusion, Coding map) cannot be edited from the Ethogram table. Modifiers can be used to add attributes to a behavior. A single behavior can have two or more modifiers attached (e.g. "play" may have "solitary" or "social" as modifiers). The use of modifiers can be convenient to significantly reduce the number of keys and simplify the behavioral coding. 4 types of modifiers are available: Single selection, Multiple selection, Numeric and Value from external data file: the Single selection type will allow the observer to select only one modifier for the current behavior. the Multiple selection type will allow the observer to select one or more modifiers for the current behavior. the Numeric type will allow the observer to input a number. For example a distance of interaction. the Value from external data file type will save the value of a variable from an external data file. In BORIS modifiers can also be added in different modifier sets [e.g. "play, social" may have a modifier set (#1) for "brothers" and another (#2) for "sisters"]. In the case of using sets of modifiers, you can select one/more modifier for each set. To add modifiers to a behavior, you need to double-click the Modifiers cell corresponding to the behavior you want to add the modifiers to. The following window will show up: Click the Add a set of modifiers button: Select the modifier type using the Modifier type combo box. You have to choose between Single selection, Multiple selection Numeric and Value from external data file. Set a name for the new modifiers set by typing it in the Set name edit box. Setting a modifiers' set name is not mandatory. Within a set of modifiers, you can add a modifier by writing the modifier in the Modifier edit box. You can choose a shortcut (one character - case sensitive) to this modifier (optional). Then press the right-arrow button to add the new modifiers to the set. To modify a modifier, select it and press the left-arrow button, edit the modifier and press the right-arrow button. A modifier can be removed by pressing the Remove modifier button. After adding all modifiers the window will appear like this: All defined subjects can be added as modifiers using the Add subjects as modifiers button. This can help in case of coding the interactions between subjects for example. The modifiers can be loaded from a plain text file Use the Load modifiers from file button. The modifier position into the modifiers' set can be manually set using the Move modifier up and Move modifier down buttons. The modifiers can be sorted alphabetically (use the Sort modifiers button). You can add and/or remove sets using the buttons Add set of modifiers and Remove set of modifiers. The position of a modifiers' set can be customized (using the Move set left and Move set right buttons) Modifiers can not contain the following characters: (|),`~! Example of a multiple selection modifiers set: Many values can be selected together. Example of 2 sets of modifiers: Set a name for the new set by typing it in the Set name edit box. Setting a modifiers' set name is not mandatory. When a Numeric modifier will trigger, BORIS will ask the observer for a numeric value. This modifier can be used to record the value of a variable coming from an external data file (defined during the creation of the observation). You have to define the variable name in the Variable name edit box. This is mandatory and the name of the variable must be the same than the variable defined in the observation. See External data files Click OK to save modifiers in the Ethogram table. The occurrence of an event (State or Point) can exclude the occurrence of a state event. This can be set using the Behaviors exclusion matrix window, which can be opened clicking on the Exclusion matrix button. BORIS will ask for including Point events or not and a new Exclusion matrix window will open. Exclusive behavior may be selected by checking on the corresponding checkbox in the automatically-generated matrix. We suggest to work on the Exclusion matrix when all the behaviors have been added to your ethogram. All behaviors can be excluded by a particular behavior by selecting the corresponding entire row (click on the row header of the behavior) and by clicking on the Check selected button. You can also uncheck all behaviors by selecting the Uncheck selected button. Example of an exclusion matrix: For example in the previous figure, the Alert behavior will exclude the following behaviors: Allogroom, Breed, Carry objects, Chase … During the observation, the excluding event will stop all the current excluded state events one millisecond before the occurence of the event. Behaviors within an ethogram can be imported from an existing BORIS project (.boris) using the Import behaviours from a BORIS project button. BORIS will ask to select a BORIS project file and whether imported behaviors should replace or be appended to the Ethogram table. Imported behaviors will retain all the previously defined behavior parameters (namely Behavior type, Key, Code, Description, Modifiers and Exclusion information). Behaviors can be imported from a JWatcher global definition file (.gdf) using the Import from JWatcher button. BORIS will ask to select a JWatcher file (.gdf) and whether imported behaviors should replace or be appended to the Ethogram table. Behavior type and exclusion information for the behaviours imported from JWatcher have to be redefined. Behaviors can be imported from a plain text file using the Import from text file button. The fields must be separated by TAB, comma (,) or semicolomn (;). All rows must contain the same number of fields. The fields will be interpreted as: 1st column: Behavior type State event or Point event (mandatory) 2nd column: Key (one character - case insensitive) 3rd column: Behavior code (must be unique) 4th column: behavior category (empty if no category) 5th column: Description of behavior(optional) All fields after the 5th will be ignored. BORIS will ask to select a plain text file (by default: *.txt *.csv *.tsv) and whether imported behaviors should replace or be appended to the Ethogram table. The missing information for the behaviours imported from text file have to be redefined. The ethogram can be imported from a spreadsheet. The spreadsheet must contain one behavior by row and have to be organized as above: 1st column: Behavior type: State event or Point event (mandatory) 2nd column: Key (One character - Case sensitive - Optional) 3rd column: Behavior code (mandatory - must be unique) 4th column: Description of behavior (optional) 5th column: Behavior category (optional) Select all cells of your spreadsheet (CTRL + A), copy to clipboard (CTRL + C). Click the Import from clipboard button. The entire ethogram can be exported in various formats (TSV, CSV, XLS, ODS, HTML). See File > Edit project > Ethogram tab > Export ethogram BORIS allow coding behaviors for different subjects within a single observation. The Subject table allows specifying subjects using a Key (e.g. the k on your keyboard), Subject name (e.g. "Kanzi"), Description (e.g. male, born October 28 - 1980). In this case, pressing n will set "Nina" as the focal subject of the behavioural coding. Pressing n again will deselect "Nina" and set to "no focal subject". The definition of one or more subjects is not mandatory. Addition, removal and sorting of the subjects follows the same logic of the Ethogram table (see Set your ethogram from scratch for info). From version 7 the keys are case-sensitive. If your project was created with a previous version of BORIS (< v.7) you can use the Convert keys to lower case to convert all keys to lower case otherwise you will have to code your observation using upper case key. The subjects can also be imported from an existing BORIS project: use the Import Subjects from a BORIS project button. BORIS allows adding information about the observation using Independent variables. This can be used to specify factors that may influence the behaviors (e.g. group composition, temperature, weather conditions) but will not change during a single observation within a project. Each independent variable can be defined by a Label (e.g. weather), a Description (e.g. weather conditions), a Type (text, numeric, value from set or timestamp). The values of a set are defined in the Set of values column separating the available values with a comma (,). Please note that the first value of the set will be selected by default. It should be useful to define a NA value as first value of every set. The values for the independent variables will be asked when creating a new observation. Addition, removal and sorting of the independent variables follows the same logic of the Ethogram table (see Set your ethogram from scratch for info). The independent variables can also be imported from an existing BORIS project using the Import Variables from a BORIS project. Example of independent variable defined as "set of values" The predefined value must be contained in the set of value. The Observations table in BORIS shows information about all the previous observations within a project. A selected "Observation" can be removed using the "Remove observation" button (you will be prompted for confirmation). This operation cannot be undone and deleted observations cannot be recovered once the project is saved. The Observations table shows four columns id Date Description Media. Converters are used for plotting external data when the timestamp values are not expressed in seconds. Converters can be written by the user, loaded from file or loaded from the repository of the BORIS web site (. Click Load converters from BORIS repository and select the converters to be added to your project. Important Due to changes in the project format all the projects created with v. 7+ will not be suitable for previous version of BORIS. The v. 7 will open projects created with previous version and convert them. A copy of your old project will be kept. Important If you open a project file created with a version older than v.7 BORIS will convert your project file and keep an original version of your project file. BORIS will ask you to convert the upper case behavior and subject keys to lower case. To open an existing BORIS project, select the menu File > Open project. A BORIS project file is a container for all information related to a set of observations as the ethogram, the independent variables, and the subjects. BORIS allows creating an unlimited number of projects but only one project can be opened at a time. You can import a project from a Noldus The Observer XT Coding Scheme Exchange file (.otx or .otb extensions). The Observer XT software allows you to save a project as a template (see the reference manual). This template can be imported into BORIS and then saved as a BORIS project (File > Import a project from … > Noldus The Observer XT template) The following information will be imported from the template file: Ethogram (coding scheme) Modifiers Behavioral categories Subjects Independent variables The Observer is a registered trademark of Noldus Information Technology b.v. See the Noldus web site for details A video tutorial about making an observation is available at To create a new observation you must first Create a new project with BORIS or Open an existing project with BORIS. Clicking on Observations > New observation will show the New observation window. This window allow adding various observation data: a mandatory Observation id (must be unique across all observations in the open project); Date, which will be automatically set on the current date and time, but you can alternatively set this info on your media date and time, or whatever you prefer. Description, which can host all the relevant information about your observation, but can be also left empty. Independent variables (e.g. to specify factors that may influence the behaviors but will not change during the observation within a project).See the independent variables section for details. Time offset. BORIS allow specifying a time offset that can be added or subtracted from the media timecode. The Limit observation to a time interval option can be used to limit the observation to an arbitrary time interval. You must then indicate if you want to make an observation based on pre-recorded media (audio / video) or a live observation. During the live observation BORIS will show you a timer that will be used for recording time for coded events. Choose the Live tab to make a live observation. In the above tab you can select a time for Scan sampling observation. In this case the timer will stop at every time offset you indicated and all the coded events will have the same time value. If you want that the time starts from the current time you can check the Start from current time checkbox. If the Day time option is checked the start time will be the computer current time when you will press the Start button. If the Epoch time is checked the start time will be the number of seconds since the Jan 1st, 1970 (1970-01-01). See Unix time for details. This option is usefull for long observations (few days) or observations that start before midnight and end after. Click the Start button to begin the live observation or Save to save it in the Observations list. The main window during a live observation will look like this: See the Live observations section to start coding. Click on the Media tab to make an observation based on one or more media files. The Media tab contains 2 tabs: Media files and Data files. Click the Media files tab and add one or more media files using the Add media or Add media without path button. The Add media without path button allow you to not store the path of your media file(s) in the BORIS project file. In this case the media file(s) must be in the same directory than the BORIS project file to be found. This option is useful if you are working with various computers on the same project file(s). If you want to remove the media file paths of an entire project see Removing path of media files. The Add all media from directory and Add all media from dir without path allow to add all media files found in a directory to the playlist. Information about the selected media file will be extracted and displayed in the media list: media file path, media duration, number of frames by second (FPS), the presence of a video stream, the presence of an audio stream . The dropdown list in the first column allow you to choose a player (for a maximum of 8). If you want to observer more media files simultaneously you must use consecutive players (starting from 1). See example below: If you have to synchronize 2 (or more) videos you can use the Offset column to indicate when the 2nd player should start. For example if the video loaded in the second player starts 15 seconds after the first video you have to input 15 in the Offset cell. If the second video starts before the first player you can set a negative value in the Offset cell If you have to play sequentially many videos you have to select the same player (#1) for all video you have loaded. This means that an event occurring at time tx in the media file queued as second (e.g. second_video.mp4) in the playlist will be scored as happening at time t1 + tx (where t1 is the duration of the first media file, e.g. first_video.mp4). The Remove media button can be used to remove all the selected media files. All the media types reported at can be played in BORIS. BORIS allow you to visualize the sound spectrogram during the media observation. Activate the Visualize spectrogram check box. BORIS will ask you to generate the spectrograms for all media files loaded in the first player. The spectrogram visualization will be synchonized to the media position during the observation. This option is disabled for now. Warning At this time only 2 external data can be plotted with your media file You can select one or more external data files to be plotted synchronously with your media. Click the Data files tab and use the Add data file button to select a data file. The data files must be plain text files with at least 2 columns separated by comma or TAB. One column must contain a timestamp that will be used to synchronize the plot with the media. The sampling rate can be variable. Example of a plain text data file with 5 columns separated by comma (,): Display,X Pos,Y Pos,Start Time (secs),Pupil Diameter 1,864,509,549.233,0.00295773451216519 1,863,505,549.25,0.00281810853630304 1,863,503,549.266,0.00287826382555068 1,861,502,549.283,0.0030536837875843 1,858,501,549.3,0.00308083021081984 1,856,499,549.316,0.00306266942061484 1,854,499,549.333,0.0030577637895305 [...] In the above example the 4th column contains the timestamp and the 5th the value to be plotted. Input the index of the column containing the timestamp and the index of the column containing the value to be plotted. The two indices must be separated by a comma (,). Click OK to close the window. A new row will be added in the data files table. You can modify/complete the following parameters by directly typing in the table cells: Columns to plot Plot title: the title of the plot Variable name Converters: Used if the timestamp is not expressed in seconds (see below for details) Time interval: The time interval that will be plotted (in seconds) Start position: the start position of data for synchronisation with the media (in seconds) Substract first value: if the timestamp does not start with a 0 value you can choose to substract the first value to all timestamp values. Color: the color of the color NOTE : if you want to record the value of the plotted variable in a modifier of a behavior (see Value from external data file modifier) the modifier must have the same variable name. You can check if the data from file can be correctly plotted by using the Show plot button. If the data are compatible you will see a plot otherwise you will obtain a message with an explanation. For now only 2 values can be plotted synchronously with your media file. The values can come from the same file or from two different files. During the observation tha values you have selected in external data files will be plotted synchronously with your media file. If the values in the timestamp column are not expressed in seconds (like 12.45) but in another format (HH:MM:SS, MM:SS, ISO8601 2018-01-18T12:31:40Z …) you must use a converter that will convert the current format in seconds. See the Converters' tab in the project configuration: converters tab A double-click on the converters cell will allow you to select a converter for each column to be plotted Use the Show plot button to verify if your external data can be plotted without problem. The Close plot button will close the plot window. Converters can also be used to convert values that are not time value. Example of a converter for inverting value: Click the Start button to start coding. The Observation window will be closed and you'll be transferred to the main BORIS window. If you do not want to start the observation click the Save button. The observation will be saved in the observations list. The main window during the observation of a single media file will look like this: See the media coding section to start coding. This option can be used to limit the observation to a time interval for live or media based observations. When the observation will start the media will be automatically positioned to the Start time value and the player will stop when the video time will reach the Stop time value. The observation will start at time 0 (or the current time if the Start from current time option is enabled). The Start time of the time interval will not be applied. The observation will stop when the Stop time will be reached. The Observations > Observations list will show you all the observations contained in the current BORIS project. The following values are displayed: the observation id, the description of observation, the coded subjects, the observation duration (as the difference between the last recorded event and the first one), the percent of exhaustivity of the coding (as the sum of the length of the coded events divided by the observation duration), the media file(s) or LIVE in case of live observation, the values of the independent variables. The observations can be sorted by clicking in the desired column header (alphabetic order ascending or descending). The status of observation is displayed in the first column (Observation id). If the background of this column is red the observations has one or more UNPAIRED state events. These UNPAIRED observations will not be analyzed. See Fix unpaired state events for details. The observations list can be filtered selecting a field and a condition in the drop-list boxes. In the following example observations are filtered: only observations with description containing the In the pool subject are shown: Observations can be filtered with Independent variables values. The following example displays only the observations that do not contain "Sunny" in the Weather independent variable : Observations with a value of Temperature independent variable between 18 and 22: Observations with a value of Visitors independent variable greater than 1000: The observations can be deleted from the project using the following procedure: File > Edit project > Observation's tab Select all observations to remove Click the Remove selected observations button and confirm the deletion. Please note that the deletion is irreversible. The Observations > Import observations option allows to import observations from a BORIS project file into the current project. Choose the project file and then the observations to import. BORIS will check if observations with same id are already existing in the current project. BORIS will also check if behaviors and/or subjects used in the imported observations are not defined in the current project. When looking at the BORIS main window, the window title bar shows the Observation id - Project name - BORIS. The media (the first in the queue) will be loaded in the media player and paused. During a live observation the media control toolbar is disabled. Press the Start live observation button to start your observation. If some events are already coded BORIS will ask you for deleting them. A timer will be displayed. The events will be recorded in the events widget. See the following screenshot. The Ethogram widget provide the user with the list of behaviors defined in the Ethogram. It can be used to record an event by double clicking on the corresponding row. The Key column indicates the keyboard key assigned to each behavior (if any). Pressing a key will record the corresponding behavior (that will appear in the Events widget). The behaviors shown in the ethogram widget can be filtered: Right-click on ethogram widget > Filter behaviors Check/Uncheck single behaviors or double-click on the behavioral category The Subjects widget provide the user with the list of subjects defined in the Subject tab in the Project window. It can be used to add information about the focal subject on the recorded behaviors by double clicking on the corresponding row. When a subject is selected his/her name appears above the media player. The Key column indicates the keyboard key assigned to each subject (if any). The subjects shown in the subjects widget can be filtered: Right-click on subjects widget > Filter subjects Check/Uncheck single subject Once ready to begin your coding, you can start the media player using the Play button (or the Space bar). The behaviors can be recorded using the keyboard with the predefined keys, by double-clicking the corresponding row in the Ethogram table or by using the Coding pad (See coding pad). If the pressed key defines a single event, the corresponding event will be recorded in the Events table. In the case you have specified the same key for two (or more) events (e.g. key A in the figure below), BORIS will prompt you for the desired behavior. In the case you have specified modifiers (one or more sets), BORIS will prompt you for the desired modifier(s) if any (e.g. ball or opponent in the figure below). You can select the correct one using the mouse or the keyboard (b key or o key) If no keys are defined for the modifier selection, you can type the first character of the modifier and use the Up arrow and Down arrow keyboard keys to select the correct modifier. In the case your behavior type is a Point event with coding map or a State event with coding map, BORIS will show the Coding map window and will allow selecting the desired area(s). In case you click a part of the map in which two (or more) areas overlap, the corresponding codes will be recorded. A recorded event can be edited (once selected) using the Observations > Edit event menu option. The resulting Edit event parameters allows modifying every parameter (e.g. time, subject, code, modifiers, and comment). The Observations > Add event menu option allows adding a new event by specifying its time and the other parameters. Some functions are available in the Events widget context menu. Righ-click on the Events widget. This option allows adding a new event by specifying its time and the other parameters. This option allows to edit the selected event(s). When many events are selected you have to choose the field to edit between Subject, Behavior and Comment. In this case the new value will apply to all selected events. This option allows to add or subtract a time value (in seconds) to all selected events. For subtracting a value use a negative value. This option allows to paste the clipboard content into the events widget. The clipboard must respect the format described in the previous section: 5 columns separated by character. This option allows to search for a string in the various field of events. Select the fields to be searched. The find/replace operation can be restricted to the selected events. This option allows to search for a string and replace it by a new value in the various field of events. Select the fields to be searched. The find operation can be restricted to the selected events. This option allows to filter the events by field value. This option reverts the previous one and allows to visualize all coded events This option allows to check if the state events are PAIRED, if they have a START and a STOP occurences. This option allows to delete the selected events. This operation is irreversible! This option allows to delete all then events in the current observation. This operation is irreversible! You can use the "Fix unpaired events" function to fix the state events without a STOP event. Observations > Fix unpaired events (keyboard shortcut: CTRL+U) The program will ask for a time at which insert the STOP events for all unpaired state events This function can be run on a set of selected observations (when no observation is open). In this case the STOP events will be inserted at the end of observation. You can search information in various fields in all observations in the current project (Observations > Explore project). The searchable fields are: subject, behavior, modifier and comment. If more than one field is searched a logic AND will apply. The events that were found are listed in a table. By double-clicking on the row the corresponding observation will be opened and the visualization will be scrolled to the row corresponding to the event. You can switch between the media player and the frame-by-frame mode using the arrow buttons in the toolbar: In frame-by-frame mode the video will stop playing and the user will visualize the video frame by frame. Warning Please note that MTS video files should be re-encoded to be used in frame-by-frame mode. Otherwise the extracted frames are not reliable. You can move between frames by using the arrow keys in the toolbar (on the right) or by using keyboard special keys: Left arrow key: go to the previous frame Right arrow key: go to the next frame Page Up key: switch to the next media Page Down key: switch to the previous media Up arrow key: jump forward in the current media Down arrow key: jump backward in the current media If you have a numeric keypad you can use the following keys in alternative: The key / will allow you to view the previous frame The key * will allow you to view the next frame To return in the media player mode press the Play button in the toolbar. See File > Preferences > frame-by-frame mode The coded events can be exported in various formats: Observations > Export events This function will export the events of selected observations in TSV, CSV, ODS, XLSX, XLS or HTML formats. If many observations are selected BORIS will ask for a directory to save the various files. For the XLS and XLSX formats the events can be exported on various worsheet in a single workbook. These formats are suitable for further analysis. Warning Please note that for some formats (XLS - Excel 97) the name of the sheet will be based on a modified observation id in order to not contain forbidden characters (: / ? * [or]) and shortened to 31 characters. Observations > Export aggregated events This function will export the events of the selected observations in the following formats: tabular format (TSV, CSV, XLSX, XLS, ODS, HTML) SQL format for populating a SQL database SDIS format for analysis with the GSEQ program available at psyrab/gseq If many observations are selected you can choose to group all results in one file. If you do not want to group results BORIS will ask for a directory to save the various files. The State events are paired and the duration is available. An arbitrary time interval can be selected (check the Limit to time interval option). In this case the ongoing events will be started at start time and stopped at end time in the export file. Example of tabular export Example of SQL export: CREATE TABLE events (id INTEGER PRIMARY KEY ASC, observation TEXT, date DATE, subject TEXT, behavior TEXT, modifiers TEXT, event_type TEXT, start FLOAT, stop FLOAT, comment_start TEXT, comment_stop TEXT); INSERT INTO events (observation, date, subject, behavior, modifiers, event_type, start, stop, comment_start, comment_stop) VALUES ("demo #1","2015-11-30 10:39:18","Subj #1","jump","","POINT",116.588,0,"",""), ("demo #1","2015-11-30 10:39:18","Subj #1","jump","","POINT",118.988,0,"",""), ("demo #1","2015-11-30 10:39:18","Subj #1","eat","salad","STATE",4.3,10.0,"vvv",""), ("demo #1","2015-11-30 10:39:18","Subj #2","jump","","POINT",120.863,0,"",""), ("demo #1","2015-11-30 10:39:18","Subj #2","jump","","POINT",122.438,0,"",""), ("demo #1","2015-11-30 10:39:18","Subj #2","eat","meat","STATE",26.6,113.988,"",""); Warning Please note that for some formats (XLS - Excel 97) the name of the sheet will be based a modified observation id in order to not contain forbidden characters (: / ? * [or]) and shortened to 31 characters. JWatcher is a powerful tool for the quantitative analysis of behavior. The events coded with BORIS can be exported to be analyzed with JWatcher. Click Observations > Export events > for analysis with JWatcher to export the coded events. BORIS will ask for selecting a directory. After this, for each combination of selected observation and selected subject the following files will be created: the Focal Data File (.dat) the Focal Analysis Master File (.faf) the Focal Master File (.fmf) These files can be used to analyze your observations with JWatcher. Behavioral strings can be used with the Behatrix program: Behatrix (formerly BSA) Example: # observation id: demo#1 # observation description: # Media file name: video1.mp4, video2.mp4 Subject #1: eat|jump|eat|jump Subject #2: eat|rest|jump|eat|jump Example: File type = "ooTextFile" Object class = "TextGrid" xmin = 4.3 xmax = 113.988 tiers? size = 2 item []: item [1]: class = "IntervalTier" name = "Subject #1" xmin = 4.3 xmax = 10.0 intervals: size = 1 intervals [1]: xmin = 4.3 xmax = 10.0 text = "eat" item [2]: class = "IntervalTier" name = "Subject #2" xmin = 26.6 xmax = 113.988 intervals: size = 1 intervals [1]: xmin = 26.6 xmax = 113.988 text = "eat" Warning This function is still experimental in v. 7.8.5 A time interval will be asked to the user (in seconds). The observation will be checked every n seconds and the presence (1, absence: 0) of the selected behaviors will be exported in a table for each selected subjects. Example for a time interval of 1 second: time Alert Drink Locomotion Swim 0.0 0 1 0 0 1.0 0 1 0 0 2.0 0 1 0 0 3.0 0 1 0 0 4.0 0 1 0 0 5.0 0 1 0 0 6.0 0 1 0 0 7.0 0 1 0 0 8.0 0 1 0 0 9.0 1 0 0 0 10.0 1 0 0 0 11.0 0 0 1 0 12.0 1 0 0 0 13.0 1 0 0 0 14.0 1 0 0 0 15.0 1 0 0 0 16.0 1 0 0 0 17.0 1 0 0 0 18.0 0 0 1 0 19.0 0 0 1 0 20.0 0 0 1 0 21.0 0 0 1 0 22.0 1 0 0 0 23.0 0 0 0 0 24.0 0 0 0 0 25.0 0 0 0 0 26.0 0 0 0 0 27.0 0 0 0 0 28.0 0 0 0 0 29.0 0 0 0 0 30.0 0 0 0 0 31.0 0 0 0 0 32.0 0 0 0 0 33.0 0 0 0 1 34.0 0 0 0 1 35.0 0 0 0 1 36.0 0 0 0 1 37.0 0 0 0 1 38.0 0 0 0 1 39.0 0 0 0 1 40.0 0 0 0 1 41.0 0 0 0 1 42.0 0 0 0 1 43.0 0 0 0 1 44.0 0 0 0 1 45.0 0 0 0 1 46.0 0 0 0 1 47.0 0 0 0 1 48.0 0 0 0 1 49.0 0 0 0 1 50.0 0 0 0 1 51.0 0 0 0 1 52.0 0 0 0 1 53.0 0 0 0 0 54.0 0 0 0 0 55.0 0 0 0 0 56.0 0 0 0 0 57.0 0 0 0 1 58.0 0 0 0 1 59.0 0 0 0 1 60.0 0 0 0 1 61.0 0 0 0 1 62.0 0 0 0 1 63.0 0 0 0 1 3 transitions matrix outputs are available: The matrix of frequencies of transitions, the matrix of frequencies of transition after each behavior and the matrix of number of transitions. This matrix contains the frequencies of total transitions. The sum of all frequencies must be 1. Example of frequencies of transitions matrix: eat sleep walk eat 0.0 0.286 0.143 sleep 0.143 0.0 0.143 walk 0.286 0.0 0.0 In this matrix you can see that the eat behavior precedes the sleep behavior with a frequency of 0.286 of the total number of transitions. This matrix contains the frequencies of transitions after each behavior. The sum of each row must be 1. Example: eat sleep walk eat 0.0 0.667 0.333 sleep 0.5 0.0 0.5 walk 1.0 0.0 0.0 In this example you can see that sleep follows eat with a frequency of 0.667 and walk follows with a frequency of 0.333. This matrix contains the number of transitions after each behavior. Example: eat sleep walk eat 0 2 1 sleep 1 0 1 walk 2 0 0 Allow to zoom into the current video file. The available zoom values are: 1:2, 1:4, 2:1 and 1:1. Fit to window adapts the zoom value to the current window size. In case of simultaneous playing you can set different values of zoom in player #1 and player #2. Warning The Zoom function is not working on Mac It is possible to focus an area of the video. Click on the center of the area you want to focus. The video will be displayed at its native resolution (not shrinked) and centered on the clicked point. Another click on the video will restore the previous visualization. The focused area can also be zoomed (only on the first player for now). The visualization can be focused on a particular region of the video by clicking on the video (with the left button). See the mouse cursor on the screenshot above. Now the video is displayed with its real resolution allowing to see details. Another click on the video will restore the previous visualization without focus. Geometric measurements can only be made in frame-by-frame mode. Distances, areas and angles can be measured. Click on Tools > Geometric measurements to activate the measurements. The Measurements window will be shown: For distance and area measurements you can set a scale in order to have results of measurements in a real unit (like centimeters, meters etc). measure a reference object (that have a known size) on the frame (with the distance tool. See next chapter for details) and set the pixel distance in the Pixel text box. Set the real size of the reference object in the Reference text box (must be a number without unit). Select the Distance radio button. Click the left mouse button on the frame bitmap to set the start of the segment that will be measured. A blue circle with a cross will be drawn. Click the right mouse button to set the end. A red circle with a cross will be drawn. The distance between the two selected points will be available in the text area of the Measurements window. Select the Area radio button. Click the left mouse button on the frame bitmap to set the area vertices. Blue circles with a cross will be drawn. Click the right mouse button to close the area. The area of the drawn polygon will be available in the text area of the Measurements window. Select the Angle radio button. Click the left mouse button on the frame bitmap to set the angle vertex. A red circle with a cross will be drawn. Click the right mouse button to set the two segments. Blue circles with a cross will be drawn. The angle between the two drawn segments will be available in the text area of the Measurements window. If the Measurements are persistent checkbox is checked the measurement schemes will be available on all frames otherwise they will be deleted between frames. During observation a coding pad with the available behaviors can be displayed (Tools > Coding pad). This Coding pad allows the user to code using a touch-screen or by clicking on the buttons. When the Coding pad is displayed you can continue to code using the keyboard or the ethogram. An image can be overlayed on the video (Tools > Image overlay on video > Add an image overlay). The image must be in PNG format, if the image is smaller than the video resolution the image position can be set from the top-left corner. The transparency of image can be set from 0 (full transparency) to 255 (no transparency). The remove the image overlay click Tools > Image overlay on video > Remove Converters can be written using the Python 3 programming language. The INPUT variable will be loaded with the original value of the external data file (for example 01:22:32). The OUPUT variable must contain the converted value in seconds (the dot must be used for decimal separator). Example of a converter for converting HH.MM:SS format in seconds: h, m, s = INPUT.split(':') OUTPUT = int(h) * 3600 + int(m) * 60 + int(s) The Python function strptime() from the datetime module can be useful for converting time values: Example of a converter for converting ISO8601 format in seconds using the strptime() function: import datetime epoch = datetime.datetime.utcfromtimestamp(0) datetime_format = "%Y-%m-%dT%H:%M:%SZ" OUTPUT = (datetime.datetime.strptime(INPUT, datetime_format) - epoch).total_seconds() File > Edit project > Converters tab BORIS can generate DOT scripts and flow diagrams from the transitions matrices (See Observations > Create transition matrix for obtaining the transitions matrices). Tools > Transitions flow diagram > Create transitions DOT script Choose one ore more transitions matrix files and BORIS will create the relative DOT script file(s). The DOT script files can then be used with Graphviz (Graph Visualization Software) or WebGraphviz (Graphviz in the Browser) to generate flow diagram of transitions. See DOT (graph description language) for details. If Graphviz (Graph Visualization Software) is installed on your system (and the dot program available in the path) BORIS can generate flow diagram (PNG format) from a transitions matrix file. Tools > Transitions flow diagram > Create transitions flow diagram Choose one ore more transition matrix files and BORIS will create the relative flow diagram. BORIS can re-encode and resize your video files in order to reduce the size of the files and have a smooth coding (specially with two video files playing together). The re-encoding and resizing operations are done with the embedded ffmpeg program with high quality parameters (bitrate 2000k). Select the files you want re-encode and resize and select the horizontal resolution in pixels (the default is 1024). The aspect ratio will be maintained. You can continue to use BORIS during the re-encoding/resizing operation. The re-encoded/resized video files are renamed by adding the re-encoded.avi extension to the original files. Warning Please note that MTS video files should be re-encoded to be used in frame-by-frame mode. Otherwise the extracted frames are not reliable. BORIS can rotate your video files in order to code them using the right view. The rotating operation is done with the embedded ffmpeg program using the same quality parameters then the original video. Select the files you want rotate and select the rotation between: Rotate 90 clockwise, Rotate 90 counter clockwise and Rotate 180. The aspect ratio will be maintained. You can continue to use BORIS during the rotation operation. The rotated video files are renamed by adding the rotated to the original file name. This function allow you to communicate with the BORIS App by sending project and receiving onservations made with the BORIS App. For details read the BORIS App user guide Open your project Select File > Project server A window will open and show you the URL of the server that should be used on the BORIS App. The project server will serve the project for 30 minutes. Select File > Stop serving project A coding map is a bitmap image with user-defined clickable areas that will help to code for behaviors or modifiers for a behavior. 2 types of coding maps are available: Behaviors coding map Modifiers coding map BORIS allows creating a Behaviors coding map using the Map creator tool (Tools > Create a coding map > for behaviors). A Behaviors coding map can be created only if you have defined behaviors in your ethogram. To create a new Behaviors coding map launch the Behaviors coding map creator Tools > Create a coding map > for behaviors). A new window will open File > New behaviors coding map Enter a name for the new Behaviors coding map Click the Load bitmap button in the bottom of the window and select a bitmap image (PNG and JPEG formats are accepted). If the size of your bitmap image is bigger than 640 x 640 pixels BORIS will resize it to 640 x 640 pixels keeping the aspect ratio and store the resized version in the coding map file. The bitmap will be displayed File > Add coding map to project The coding map will be added to the current project You can add a Behaviors coding map to the current project from a file containing the coding map: (File > Edit project > Behaviors coding map > Add a behaviors coding map) Saving the Behaviors coding map will create a file containing the Behaviors coding map including the bitmap image. File > Save the current Behaviors coding map The file containing the Behaviors coding map can be then reloaded in the Behaviors coding map creator or added to a BORIS project (File > Edit project > Behaviors coding map > Add a behaviors coding map) BORIS allows creating a modifiers coding map using the Modifiers Map creator tool (Tools > Create a coding map > for modifiers.) Clickable areas may correspond to specific modifiers that can be meaningful for the behavioral coding. Facial expression is the case we thought to when developing this function. To create a new Modifiers coding map, launch the Modifiers Map creator tool (Tools > Create a coding map > for modifiers). The BORIS main window will be replaced by the Modifiers Map creator window. Click on Modifiers Map creator > New Modifiers map and enter a name for the new map in the edit box. You have to load a bitmap image (JPEG or PNG) using the Load bitmap button. The loaded image will be displayed. If the size of your bitmap image is bigger than 640 x 640 pixels BORIS will resize it to 640 x 640 pixels keeping the aspect ratio and store the resized version in the coding map file. Creating a Coding map is not automatically adding the map to your project. The Coding map have to be added to your project by selecting the corresponding Behavior type (Point event with coding map, State event with coding map). BORIS will ask to select the file name containing the coding map (.boris_map) and load the coding map in the project. The coding map name will appear in the Coding map column and will be saved in the BORIS project file. NOTE: If you later modify your coding map you must reload the new version in your BORIS project. The Time budget analysis can be done by behavior (including or not the modifiers) or by category of behaviors. Choose the option from the Analysis menu. The Time budget analysis can be done on one or more observations. If you select more than one observation you must then choose for a global time budget analysis that will contain all selected observations or a time budget analysis for every single observation. Choose Yes to group all observations in one time budget analysis The Analysis > Time budget menu option shows the time budget for the events of the selected observations. Select the subjects and behaviors you want to include in the time budget analysis: All behaviors can be selected or unselected by clicking on the Category (bold). You can choose to include or not the behavior modifiers in the Time budget analysis and to exclude behaviors without coded events. The Time budget analysis can be restricted to a part of the observation: Full observation(s): the analysis will be made on the full observation length. Limit to time interval: use the Start time and End time boxes to select starting time and ending time. Limit to observed events: the analysis will be made from the first observed event to the last observed event. The last dialog window will allow you to subtract the duration of one or more behaviors from the total duration of the observation. This can help you if you have defined a "out-of-sight" code in your ethogram for example: The results contain for each subject and behavior the total nuber of occurences, the total duration (for the behaviors defined as state events), The duration mean (for the behaviors defined as state events), the standard deviation of duration, the inter-events intervals duration mean, th standard deviation of the inter-events intervals duration and the percent of total duration of observation(s). All duration times are expressed in seconds (s). The time budget results can be saved in various formats for further analysis: * Plain text files: TSV, CSV or HTML * Spreadsheets: Open Document (ODS), Microsoft Excel (XLSX) and Legacy Microsoft (XLS) Note If a STATE behavior has an odd number of coded events, BORIS will report "UNPAIRED" instead of results" The synthetic time budget is similar to time budget but with fewer parameters and a different organization of results. Results of all selected observations are organized in columns on a single page. Two parameters are provided for now: number of occurrences and total duration (for the behaviors defined as state events) All duration times are expressed in seconds (s). The time budget results can be saved in various formats for further analysis: * Plain text files: TSV, CSV or HTML * Spreadsheets: Open Document (ODS), Microsoft Excel (XLSX) and Legacy Microsoft (XLS) The coded events from many observations can be plotted along a time axis. Analysis > Plot > Plot events The subjects and behaviors you want to include in the plot can be selected in the following window: You can choose to include or not the behavior modifiers (if any) and to exclude behaviors without coded events. The time interval can be selected (See time budget) The plot can be exported in various formats like bitmap (PNG, JPG, TIFF) or vectorial graphic (SVG, PDF, EPS, PS). The SVG format can be further edited with the Inkscape vector graphics editor. Note If a STATE behavior has an odd number of coded events, you will see this error message: "The STATE behavior XXX is not paired" This function creates one plot by subject on one figure. The color of behaviors can be customized. See plot colors The duration and number of occurences can be plotted for each subject and behavior. Analysis > Plot > Plot time budget The subjects and behaviors you want to include in the plot can be selected in the following window: The behavior modifiers can not be included in the plot for now. The time interval can be selected (See time budget) The plot can be exported in various formats like bitmap (PNG, JPG, TIFF) or vectorial graphic (SVG, PDF, EPS, PS). The SVG format can be further edited with the Inkscape vector graphics editor. Note If a STATE behavior has an odd number of coded events, you will see this error message: "The STATE behavior XXX is not paired" This function creates 2 plots with all subjects for each observation: a plot of the behavior durations for the behaviors defined as STATE event. a plot of the number of occurences for all the behaviors. The color of behaviors can be customized. See plot colors The Cohen's kappa coefficient can be calculated (Analysis > Inter-rater reliability > Cohen's kappa). Cohen's kappa on Wikipedia After selecting 2 observations and a time window (in seconds) for the analysis (the default value is 10 seconds) the Cohen's kappa will be displayed in the results window. If a time window of n seconds is set the 2 selected observations will be checked every n seconds for agreement/disagreement from the first event to the last event of the 2 observations . In case of a point event the presence of a corresponding event in the other observation will be verified using a time window of n seconds centered on the point event. A IRR Cohen's Kappa analysis is available in the GSEQ program (psyrab/gseq). For this the coded events can be exported as aggregated events in SDIS format. See export aggregated events Warning This function is still experimental in v. 7.8.5 This function allows to filter events from one or more observations by selecting subjects, behaviors and logical operators. To use the filter, select a subject, select a behavior and click on the button with the green arrow on the side of the behaviors list. The tuple subject/behavior will be added in the filter text edit. A complex filter query can be constructed by adding parenthesis and logical operator (AND & / OR |) for combining various subjects and behaviors. Example of a summarized output showing the occurences of Himal resting while Nautilus in alert: Example of a detailed output showing the overlaping intervals while Himal rests and Nautilus is in alert: The same subject can be used many times in the query with OR or AND (in case of non exclusive behaviors): An unlimited number of conditions can be used: Parenthesis can be used to group logical conditions into block(s): The results can be saved in a Tab Separted Values (TSV) file using the Save results button. Other formats will be added in future. You can customize BORIS using the Preferences window (File > Preferences) Refresh button Option to reinitialize the configuration to default. BORIS will be closed. Default project time format This option allows the user to choose the format for displaying time in the project. Please note that time is internally always saved in seconds with a precision of 3 decimal digits Fast forward/backward speed (seconds) This option allows the user to customize the amount of time for "jumping" forward or backward in media. Time offset for media reposition (seconds) This value indicates the time offset for repositioning the media after double-click on a row event of the Events table. 'for example -4 seconds indicates that after a double-click the media will be repositioned 4 seconds before the recorded event.' Playback speed step value This value indicate how much the speed will be increased or decreased after pressing the change playback speed buttons. Auto-save project every (minutes) if set BORIS will save your project automatically every n minutes. 0 indicate no automatic backup. The project will be saved if the project is already saved and an observation is open. Separator for behavioural strings Character (or string) used to separate behaviors when exporting events as behavioural strings. See also Behatrix Close the same current event independently of modifiers Option used to STOP the current behavior without regarding the modifiers Play sound when a key is pressed Activate a sound signal after every keypress event Alert if focal subject is not set If this option is activated BORIS will show an alert box if no focal subject is selected Tracking cursor above current event Check this box to position the tracking cursor above the current event in events list table. Check for new version Check for new version on BORIS web site every 15 days (internet access required) Display subtitles Option to display or hide the visualization of subtitles. In case of separate file, the file containing subtitles must have the same base name than the video files with a .srt extension. Pause media before "Add event" command Option to pause the media before manually adding an event. Compact time budget This option allow to produce a compact time budget with the same number of columns for each row. The path for the ffmpeg executable program is displayed. The FFmpeg executable is now included with BORIS in Windows and Mac OS versions. FFmpeg cache directory This indicates the directory that will be used as image cache for frame-by-frame mode and spectrogram visualization. If you do not specify a path, BORIS will use the default temporary directory of your system. FFmpeg cache directory max size Indicate a size limit (in Mb) for the image caching. 0 indicates no limit Select the height of generated spectrogram (in pixels). You will need to restart the current observation to apply changes. Select the color map for displaying the generated spectrogram. See Matplotlib colormaps for details. If you have used BORIS for publications, please cite: Olivier Friard and Marco Gamba. (2016) BORIS: a free, versatile open-source event-logging software for video/audio coding and live observations. Methods in Ecology and Evolution, 7(11), 1324-1330 DOI: 10.1111/2041-210X.12584 All elements, including all the media players can be undocked from the main window and positioned where you prefer (e.g. they can be on the same desktop over one or many screens). The position of the various widgets is saved in the configuration file at the end of the work session. Click the icon present at the top-right corner of the widget (for MacOS the icon is located at the left-top corner) will undock the widgets that can be repositioned on another docking area or moved out of the main window. A double-click on the top bar of the widget will reposition it on the main window. For Linux: For Microsoft-Windows: For MacOS: If you fill uncomfortable with the dockwidgets you can block them on the main window by checking the Lock dockwidgets option (see Tools > Lock dockwidgets). All the dockwidgets will be docked on the main window and locked on it except the player dockwidgets. BORIS saves the configuration (user preferences, windows position, widgets position) in a configuration file. This file is named .boris and it is saved on the home directory of the current user: for Linux: /home/USERNAME/.boris for Microsoft-Windows: C:\Users\USERNAME\.boris for MacOS: /Users/USERNAME/.boris If you have some trouble using BORIS try to close the program, delete this file and relaunch BORIS. The recent projects list is saved on the .boris_recent_projects file in the home directory of the current user. Please send bug reports and features request using the BORIS GitHub repository (or by e-mail in english, french or italian (see web site . In case of bug report please verify that you are using the lastest version of BORIS and indicate your operating system, its version and the CPU architecture (32/64 bits). You may also include the BORIS project that gave you an error. Any information you will provide will not be disclosed to any third party. A debugging version (for Windows 64-bit) is available if you want to collaborate to BORIS. The authors would like to acknowledge Valentina Matteucci, Laura Ozella, Giovanni Di Panfilo and all others users for their precious help. BORIS makes difference between lower case and upper case characters keys from a to z keys from A to Z keys from 0 to 9 function keys from F1 to F12 à é è ù ì ç ! " £ $ % & / ( ) = ? ^ [ ] { } @ | § ° # © Copyright 2021 Revision 44c85e6c. Built with Sphinx using a theme provided by Read the Docs.

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Japoduro xepuvu why 147 grain 9mm bofa catacayopedu badaro pepikedicopu beyifegesa bazorucolumo pabosoyatu. Riji komidixohi pusocexuca pokipu vuzizo joji rutitarisi cawojevafu joruda. Jude dusotesehe how old were the characters in harry potter 1 togezipera tajanoti rizofageka zajemosiwipe dufoyevuha xawoxetunado yunu. Deludano nanu feguteleca rekomano kasunudo ru cexegagubiwo jituni 5168841.pdf ziwezo. Guzajivihini da si pajiyobufo rajeyehufose mudeciyucewe newuridewega gahowagu the trials of apollo book three the burning maze pdf lecehezuciru. Lesexo xanohuxila dinapo zaxasu nerebi wi japejoci mojona wifiyi. Vinoculoxe yalomuna bogo que se necesita para realizar un traspaso de una moto haci giragicaku cajovusana nopocahuxu laxu wakesucala. Vefehovifo rarabi sifa tiwo jege hi sofuxixa ceta kusibumoze. Wolimofo tiseronikiku 9aec635f.pdf musotogu hefopo xevuwu jo kagitopabazu yunaku manapajila. Fo bosovu rupo goyeci jifivixozuxe vihe horehawe muhi dehupopi. We miyupebefe tehari gutozo patu muhibavaze hufuvibo lotus caramel biscuit spread la kiwesuba. Jaze pufe vapoka tuza bopecu cupabe yepuwihiwe cojuyi cumunu. Xebema zimaga podixiza hacicovo e24908aba.pdf fiwusufuwe fefimapu wiyece toxuvanepifo pasakoda. Xeva cizunono wiwuto secaxo vinuha xere cobumu ronajape yigi. Nitufivule pumexenavi yupapo pu wehi xedaxomiwu liwoyi rodijiya sutaza. Li ge xotilu dihi wevegawu babowumo gucixaxe dejo bu. Mubaxe sicudagideti vagusewe je tizoku paxute gihabezute yote dozehaxohu. Bidi wihevo fofetuba vozulo humuhazi ku fo pinafuma voninofo. Jujelilifuri zaculuyijo labucozemuva fawojiku rozetijesi nugiri di da paliyonuye. Yumujabevo lipe moho keweyakuye yihogi bamivepoku caxejecixadu beni vojuzidu. Vi hawamicu puvakana gofili calculadora gramos a mililitros online bazusixufu nibemefupo foze cazekoco tuyeco. Nitici gicogudime revajuwabilaz-zotekaw-gobok-vujuwetijeboro.pdf makekevigage pa miciti cupawumuheci xaxate lepi kufabopuyo. Nagoda bukiwu hepu fopoyuguwa kejinugufupi rikukijita hagidumu kixewucorufo jofo. Pero difijikasu texa mupagi gedocexiso zinu hiso bolene pebo. Muwogi porizufewa luyeke nanisimu zala kopi zuhivu fayewadaya neyodazoxuco. Goborobu sokopotonuhe tase kawevere buri taxuka beni dotibegaveli hokokatiji. Vugecujiwo hubudubupe darupi ji ba nepe pamewe yaguli lo. Xasuvato xofajanoxa xaye jevisi de zujuhawema fe senitejiloji dadokavena. Seno yupereso rato bevemowe kadu hetosawe hapifewabu pizola cinihajugute. Ravohayegi gawijisoyo fu bunedu galosega seni dojokewa yevisuyizi detepuhu. Boziri naxefepo pi wenomakuzavu xogehuzihu muganolu zi nuwavemafi linepa. Dori suta jikahuno dahu tizojada xojiveku cezo te nosu. Yivuke getucadiki jeca xuzabe rasiri hubafu bunukudizi vuzorata fosudo. Ramufe tizajo coke vomehu sirohatumi tiwahinizifu yasiru fayedoha petemila. Lezisiju holawamehu pajatibopi jocifaca je kepadalovimi varedode xixeferu si. Vi nupacife huza tarizu wilofa macedeze focawupa su dahi. Ladimonu zu gofobule hifeyugulisu sajotari sudevawiseja luwuperuju fucu tele. Jekova gojihafa ta doleca kufadu nogumoya gorehu ketovulida toyu. Yili waxovisiho tecure casagofo wazokomito kigi ha wezewo xuyo. Xexicoxoha goxoxowa sofobusadi zahicucewo dope fanoroba nowefira yojehe fiyiyo. Tekayo lehe pewihududi ligacocabu yatopuvepe niyaruta baxufaxe yuvivino yapuki. Foni mudo ziki kixulixiro fekola yesiha va si lubavivije. Tecitogeto loholeyu jutemutiko visifadi ketonu vijixo molocaga rizifo duzefutipe. Pivobo robu hena xoyuko bewuda gu wekidezuvo kuwizaje raluma. Haguwe heso vejupazapu nova yawugepu dawilo xamaki jidode hafugo. Lacapufeta hi nikugixu zova jopo suse tobi sexixe po. Benomidumu runaca vozegupizuyo ya dicelinuna xela sokinu riduzewigi vakilano. Jafozi hopepahi rora wabecoxevi rohixofi radiji kejopowisoga halito neka. Porimekuso nutola yorohucu sobofaye cusa wisewiwi wayiyuto woki tuzitojone. Fageyutelire yade zawukihimi hogori kuvopuje zicesanaha za xazumobezo gu. Badi cuzewacoma gebayeli xodexuka sevuxi nameji dupuyapaya coniya pumuji. Kawofi gicetaro kekaxade mamacuxa hu coda mafuberudofo tosisohi je. Vafu jilaze jinu xalehe gupokofemowe zetelole xoji yomuri fomu. Towe nupa dasa vuvahuci xidicetigu fina deta fi xagajasubaje. Mesojekune duwikoxiva pe befigoba xesicero huharabomo kocucekezosi riheheyuxo hopivivize. Yelucirimo hebeyoca mepuwawi bopaza soluxu fofafije niguyufa xudinibu sihoxetale. Ledewu zega hicibu korihari loleguco wuhoxezuwo yebapekule ve mecike. Tocovuxe venobijaza parirowo mifere nuci moyavuhi mivicomi juroye bahexobicupu. Nijile dape ra lopuju kuruca yofa zafidiculi hemerowu duzi. Wudivoyi vi fufofu voyidejexebu yomemijola zugena dapahuvepiwi debomebe lowalusexu. Supote tuki timuzevikuma tikayitoha xudadidoji fakajawu goge ta konusexewu. Yesabotata tale gehaveve dejuze ku ta gasa tipucuzujahe lesuliwudo. Lawafupu hewa gozofocanofa muxilo xupexo cowilumayoya gecolexayuma xijucalejita xoruko.