Title: Big Brain or LAME?

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Abstract: This project develops an interactive brain teaser game that influences the user to think outside of the box in order to progress through its various levels. Only three "lives" will be given to the user to make the experience one of trial and error, as the user will be deemed “lame,”and need to start from the beginning if they run out. Each proceeding level on average takes more attempts to complete than the last, giving the game its tedious intention. The project will be developed using Canvas, HTML, CSS, and Javascript, and will be easily accessible through a Github Pages link.

Content:

Title Screen:

Upon loading the website, a ‘title screen’ is presented to the user, with a flashing ‘play’ button in the bottom right corner of the game screen. Javascript is implemented to execute a function upon clicking of button. A general statement regarding the website using ‘cookies’ is displayed below the game screen, and is present throughout the entire game.

Rules:

Upon clicking the ‘play’ button, the game displays the basic rules for the game, along with a ‘begin’ button in the bottom right corner of the game screen, which displays the first level to the user when it is clicked.

Level 1:

Asks the user for the time, based on created canvas clock and displayed time. User must correctly enter time to advance to level2 (clicking created ‘submit’ button in process), or they will run out of brains and trigger the gameOver() function.

Multiple functions were acquired from W3CSchools to assist in the development of the canvas clock displayed within the level, being slightly altered to relate back to the project at hand, including:

- drawClock()-https://www.w3schools.com/graphics/canvas_clock.asp
- drawClockFace(ctx, radius)-https://www.w3schools.com/graphics/canvas_clock_face.asp
- drawClockNumbers(ctx, radius)-https://www.w3schools.com/graphics/canvas_clock_numbers.asp
- drawTime(ctx, radius, cDate)-https://www.w3schools.com/graphics/canvas_clock_hands.asp
- drawClockHand(ctx, pos, length, width)-https://www.w3schools.com/graphics/canvas_clock_hands.asp

All other functions used within level (*addzero(s), displayTime(), refreshTime(), stopClocks(), loseBrain(), level1()*) were created on own without usage of outside sources.

Level 2:

This level has the user complete simple math problems before the canvas bomb explodes, clicking the created 'submit' function when finished. The only way (unless you're incredibly fast) to do this is to click and drag on the bomb string flame to give you more time. Upon clicking 'submit' with correct answers to problems before the bomb explodes, the user advances to level 3.

Two functions were used from OurCodeWorld in assisting with functions relating to clicking and dragging upon the canvas ('mousedown' canvas event listener function found in *drawBomb*, as well as *extendBombString* function called upon 'mousemove' canvas event listener function):

- getElementPosition(obj)
- getEventLocation(element, event)
- Source for both:
  https://ourcodeworld.com/articles/read/185/how-to-get-the-pixel-color-from-a-canvas-on-click-or-mouse-event-with-javascript
  Author: Carlos Delgado

All other functions used within level (*makeForm(), kaboom(), resetLevel2(), makeTimer(), extendBombString(event), onMouseUp(), drawBomb(ctx, width, iHeight, clHeight), rgbToHex(r, g, b), makeFormWork(), loseBrain(), level2()*) were created on own without usage of outside sources.

Level 3:

This level asks the user to "Feed the baby", where all 'attempts' to do so will lose a brain unless the user feeds baby cookies. The "feeding" process is done through dragging and dropping canvas images. Upon successful feeding of the baby, the *youWin(),* function is executed, ending the game.

Two functions were used from OurCodeWorld in assisting with functions relating to clicking and dragging upon the canvas ('mousedown' and 'mousemove' canvas event listener function found in *updateCamvas*,):

- getElementPosition(obj)
- getEventLocation(element, event)
- Source for both:
  https://ourcodeworld.com/articles/read/185/how-to-get-the-pixel-color-from-a-canvas-on-click-or-mouse-event-with-javascript
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All other functions used within level (*updateCanvas(ctx), loseBrain(), level3()*) were created on own without usage of outside sources.

Misc / End of Game:

- *LoseBrain()* - function decreases global 'lives' variable and updates corresponding HTML. If lives reaches 0 ,gameOver() function is called. Function is called when user has an incorrect level attempt, and alerts the user that they have "lost a brain" upon doing so..
- *gameOver()* - function effectively ends the game, and is triggered when global 'lives' variable reaches 0. Displays 'game over' screen and has 'play again' button if user wants to restart game, which upon clicked refreshes the page and brings user back to title screen.
- *youWin()* - function effectively ends the game, and is triggered when user completes level 3. Displays 'victory' screen and has 'play again' button if user wants to restart game, which upon clicked refreshes the page and brings user back to title screen.

Images:

- Cartoon brain, present in most background images - https://www.clipartmax.com
- Dunce cap, present in title screen - https://www.istockphoto.com
- All other images used were either created by myself or from http://www.clipart-library.com, which along with the other two websites provide royalty-free images for the public

User Manual (Without Solutions):

1. Set-Up:
    - "Online" play:
        - Go to https://jacobleboeuf.github.io/comp4900722f2021/ on your favorite browser.
        - For best experience, load game on a computer rather than a mobile device, or at the very least use a device containing a physical mouse or touchpad.
    - "Offline" play:
        - Download the zip file provided in the Github repository: https://github.com/jacobleboeuf/comp4900722f2021
            - leboeuf-jacob_comp4900722f2021-final-project.zip
        - Extract the .zip file and open the index.html file, keeping the files in their desired locations
        - For best experience, load game on a computer rather than a mobile device, or at the very least use a device containing a physical mouse or touchpad.
2. How to Play:
    - Title Screen:
        - Click 'Play' to play!
    - Rules:
        - Read the rules carefully to learn how the game works
        - Click 'Begin' to begin!
    - Level 1:
        - Fill the text boxes (HH, mm, ss, sss) to enter the time!
        - If the time is wrong, you lose a brain!
    - Level 2:
        - Fill the corresponding text boxes by answering the math problems!
        - Be quick, because if you don't complete the problems before the bomb explodes, you lose a brain!
        - If the answers are wrong, you lose a brain!
    - Level 3:
        - Drag and drop the food to the baby so they can be fed!
        - If the baby doesn't want the food, you lose a brain!
        - Helpful hint: The baby loves sweet food!
    - Game Over
        - If this message shows up, you lost the game! You're Lame!
        - Click 'Play Again' to restart the game!

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2. How to Play:
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        - Click 'Play' to play!
    - Rules:
        - Read the rules carefully to learn how the game works
        - Click 'Begin' to begin!
    - Level 1:
        - Fill the text boxes (hh, mm, ss, sss) to enter the time!
        - If the time is wrong, you lose a brain!
        - ***Solution:*** Stop the clock by clicking on it. Then enter the time (hh, mm, ss, sss) displayed and advance to level 2
    - Level 2:
        - Fill the corresponding text boxes by answering the math problems!
        - Be quick, because if you don't complete the problems before the bomb explodes, you lose a brain!
        - If the answers are wrong, you lose a brain!
        - ***Solution:*** Click and drag the flame on the bomb string upward to increase the time left before the bomb explodes, then correctly answer the math problems before the timer runs out
    - Level 3:
        - Drag and drop the food to the baby so they can be fed!
        - If the baby doesn't want the food, you lose a brain!
        - ***Solution:*** Click on the 'click here' portion of the cookies statement below the game screen, turning the bleach into cookies. Drag and drop the cookies to the baby
    - Game Over
        - If this message shows up, you lost the game! You're Lame!
        - Click 'Play Again' to restart the game!