

GNG 2101

Design Project User and Product Manual

Mouse-ify! (Mouse Skills App)

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Table of Contents

1 Introduction	1
2 Overview	2
2.1 Conventions	4
2.2 Cautions & Warnings	4
2.1 Overview	4
3 Getting started	5
3.1 Configuration Considerations	7
Figure 6: Graphical depiction of the system configuration	8
3.2 User Access Considerations	8
3.3 Accessing/setting-up the System	8
3.4 System Organization & Navigation	9
3.5 Exiting the System	10
4 Using the System	11
4.1 Modules	15
4.2 Puzzle	22
4.3 Word	29
5 Troubleshooting & Support	33
5.1 Error Messages or Behaviors	33
5.2 Special Considerations	34
5.3 Maintenance	34
5.4 Support	34
6 Product Documentation	35
6.1 Application	36
6.1.1 BOM (Bill of Materials)	36
6.1.2 Equipment list	36
6.1.3 Instructions	37
6.2 Testing & Validation	41
7 Conclusions and Recommendations for Future Work	43
8 Bibliography	44
9 APPENDIX I: Design Files	45
10 APPENDIX II: Other Appendices	46
Client Interview Questionnaire	46
Customer Needs & Prioritization	46
Benchmarking & Metrics	48

List of Figures

Figure 1. User Interface Flowchart	4
Figure 2. Prototype on simulated Computer	6
Figure 3.1 : Step 1 Getting Started	6
Figure 3.2 : Step 2 Web Browser	7
Figure 3.3 : Step 3 Construct 3 Game Loading	7
Figure 4: Caption: Main game screen (Landing page)	8
Figure 5 Caption: Module 1 video menu	9
Figure 6: Graphical depiction of the system configuration	12
Figure 8. Main Page	14
Figure 8.1. Menu	15
Figure 9. Level Options	16
Figure 10. Module Options	16
Figure 11. Module lv 1 Video	17
Figure 12. Module lv1 Exercise	18
Figure 13. Module lv2 Video	19
Figure 14.1. Module lv2 Exercice part 1	19
Figure 14.2. Module lv 2 Exercice part 2	20
Figure 14.3. Module lv2 Exercice part 3	20
Figure 15. Module lv3 Video	21
Figure 16.1. Module lv3 Exercice part 1	22
Figure 16.2. Module lv3 Exercice part 2	23
Figure 17. Module lv4 Video	23
Figure 18.1. Module lv4 Exercice part 1	24
Figure 18.3. Module lv4 Exercice part 3	25
Figure 19 lv1 Puzzle	26
Figure 19.1 lv1 Puzzle Complete	27
Figure 20 lv 2 Puzzle	27
Figure 20.1 lv 2 Puzzle complete	28
Figure 21 lv 3 Puzzle	29
Figure 21.1 lv 3 Puzzle Complete	29
Figure 22.1 lv 4 Puzzle Complete	32
Figure 23. lv 1 Word	33
Figure 23.2. lv 1 Next Level Screen	34
Figure 24. lv2 Word	35

Figure 25. lv 3 Word	35
Figure 26. lv 4 Word	41
Figure 27. Creating a Project	42
Figure 28 Creating Layouts	53

List of Tables

Table 1. Acronyms	6
Table 2. Bill Of Material	42
Table 3. Referenced Documents	53
Table 4. Customer Needs	54
Table 5. Benchmarking	56
Table 6. Target Specification	59

List of Acronyms and Glossary

Table 1. Acronyms

Acronym	Definition
BOM	Bill Of Materials
UI	User Interface
lv	Level

1 Introduction

This project aimed to provide a platform for such users to improve their computer mouse skills by offering a range of exercises designed to enhance the fluidity of their movements. Using the Construct-3 platform, the app has been developed to cater to users of all levels and abilities, with the goal of providing an accessible and user-friendly interface.

This document contains all information pertinent to the general functioning and troubleshooting of this product. Whether you are a first-time user or an experienced individual, this guide contains all the necessary information to set up and navigate through the system with ease. It covers everything from basic system overview to troubleshooting common issues, finding support and awareness of overall cautions and warnings. After reading this, a user and/or engineers will be able to set up, start, navigate through the system, troubleshoot, find support and be aware of overall cautions and warnings. The purpose of this is to avoid a scenario where a user is stuck and cannot use the app due to possible lack of clarity in certain areas of the system overview. In addition, in this manual, you will find detailed information on how and why certain decisions were made and the team's future plans.

Our aim is to ensure that every user or engineers have a seamless and positive experience with the mouse skills app. We understand the importance of clarity and accessibility when it comes to using technology, and this guide has been created to eliminate any confusion or uncertainty that may arise during the use or recreation of the app.

Our hope is that this comprehensive guide will empower users to confidently use the app and derive maximum benefit from it. We appreciate your interest in this project and hope that this guide will assist you in using the mouse skills app with ease and confidence.

2 Overview

Despite the widespread use of computers, many people struggle with mouse skills. Our client, Travis from Computer Wise, asked our team to design a mouse skills application which allowed users suffering from neurological conditions and physical disabilities to maintain and/or improve basic mouse skills. A need exists to design and program a versatile, age appropriate, attention grabbing, and highly repetitive mouse training game to teach people of all background of computer knowledge, including those with mental and physical disabilities to learn and apply mouse skills learned from the mouse game to their everyday tasks and internet activities using personalizable mouse training and the ability to progress in additional mouse functions and/or shorter time given to react to each obstacle.

The application's key features included:

- Inclusive: made for all level
- Interactive tutorials and feedback to help users learn and improve their mouse skills.
- Customizable game settings
- Fun and Engaging
- Adaptive difficulty level
- Attention-grabbing and highly repetitive game design
- Multiple difficulty levels to accommodate users with varying skill levels
- Challenging : Provide a funner experience for more advanced users.
- Cover all major mouse action used on daily basis
- Accessible interface for users with disabilities

At this moment, the target clientele are adults with disabilities (neurological condition and physical disabilities) with difficulty using the mouse or in need of practicing the application. According to a survey from the *Census Bureau of America*, about 19.9 million people have difficulty lifting and grasping, affecting their mouse skill and impacting their computer use. Approximately, 62% of them own a digital device with internet access. Similarly in Canada, approximately 18.6 million people aged between 25-64 years have a disability. Given that in this age using a computer and internet is considered a basic skill, the data shows that several million people are looking to improve their skill, or lack of to increase their access to. We concluded that there exists a need and a market for such an application.

This product is better than what is in the market because it addresses all main concerns previous users have had with similar applications. It will assure maximum customer satisfaction by complying with all needs.

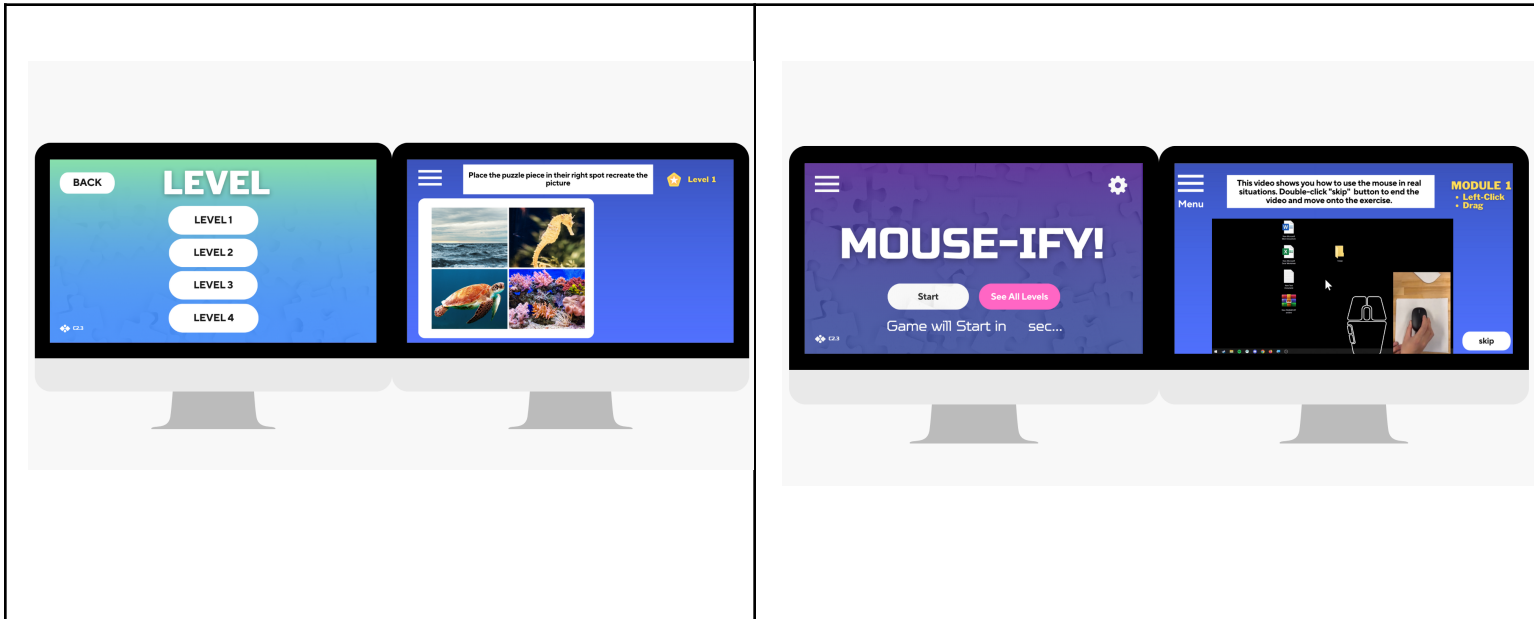


Figure 2. Prototype on simulated Computer

This is a full software project. Construct-3 is a 2D game engine that can be used to design and create games. The mouse training game is a web-based application and can be accessed through any web browser compatible with our third party software, Construct 3. The interface includes a series of modules, exercises, puzzle and word games that improve the user mouse skill at various levels. This Mouse application is good for beginners, experienced developers, and anyone in between.

The flowchart, for the mouse skills app, explains the sequence of steps and decision points involved in using the app, and how the user navigates through the system eg. The user launches the app and is presented with the main menu. It also explains the overall structure and logic of the app, as well as provide a roadmap for troubleshooting or support if needed.

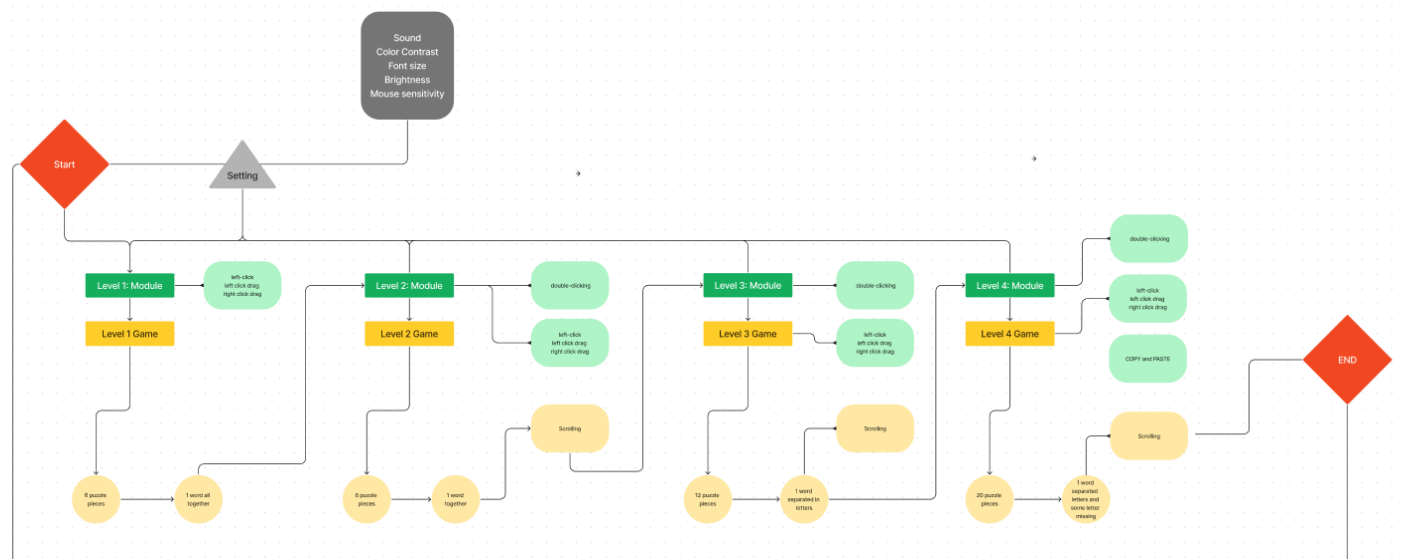


Figure 1. User Interface Flowchart

3 Getting started

1. Make sure your device is connected to a stable wifi connection and with a compatible internet browser

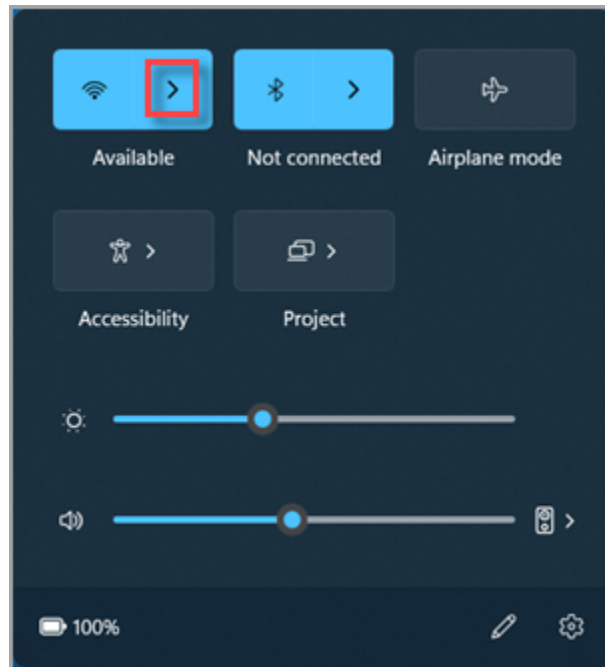


Figure 3.1 : Step 1 Getting Started

Alttext: Picture of the Windows 11 wifi network image from Microsoft official website

2. Open your web browser of choice (Chrome, Explorer, Safari ect...) and type in the following web link or URL (weblink) found in the *APPENDIX I: Design Files* document *Mouse-ify!* in the search bar. The url can be copy-pasted or an instructor can help with this step if the user cannot make use of the mouse.

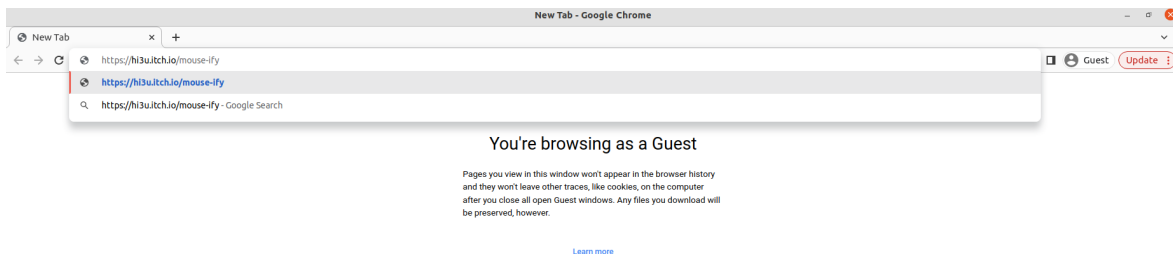


Figure 3.2 : Step 2 Web Browser

Alt text: A screenshot of the Mouseify Game Link on Chrome User Browser

3. Press “Enter” or “Return” when the web link has been entered properly. It should take you to Construct 3. You may need to wait for the web page to load, depending on your internet speed. The construct 3 logo may appear on screen as shown below.

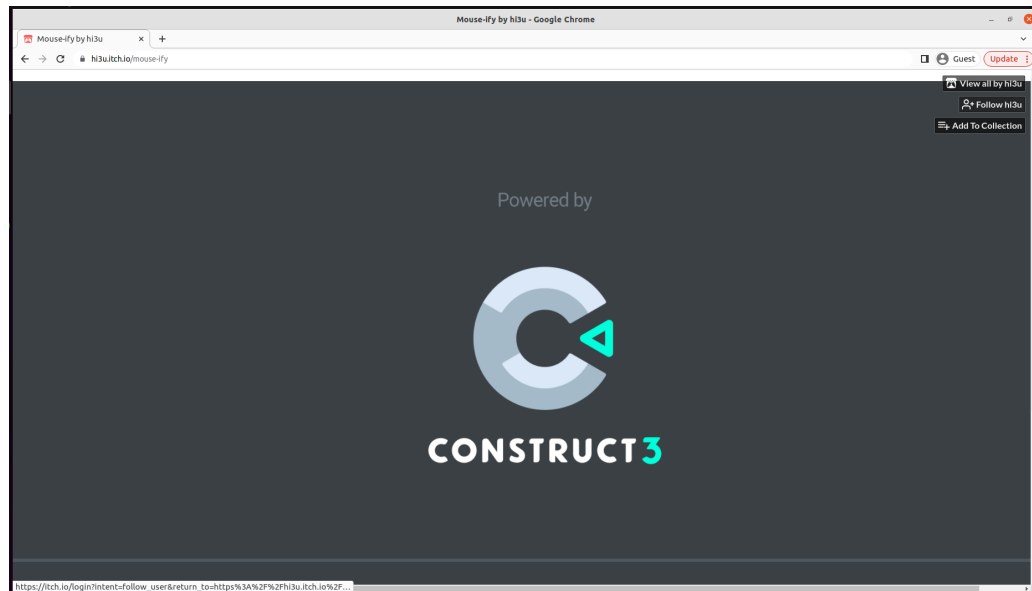


Figure 3.3 : Step 3 Construct 3 Game Loading

Alt text: A screenshot of the Construct 3 game engine loading a game project.

4. Find the “Start” button or “See All Levels” at the bottom, and then click once to activate the module or the game should automatically start.

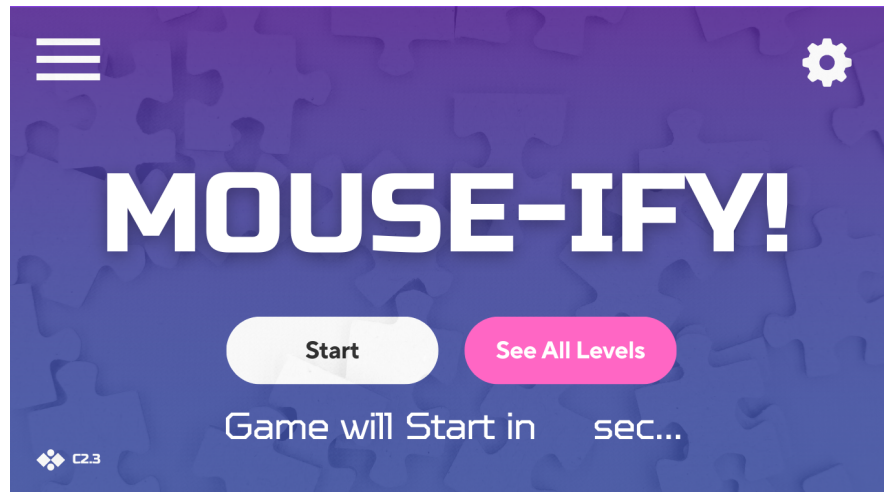


Figure 4: Caption: Main game screen (Landing page)

Alt text: A screenshot of the main game screen (landing page) of the Mouse-ify. The screen features a colorful and engaging design, including the buttons "Start ", "Settings", and "See All Levels". In the background, there is a pill of puzzle pieces in a blue tint.

5. When the game starts, you need to follow the instructions to complete games.

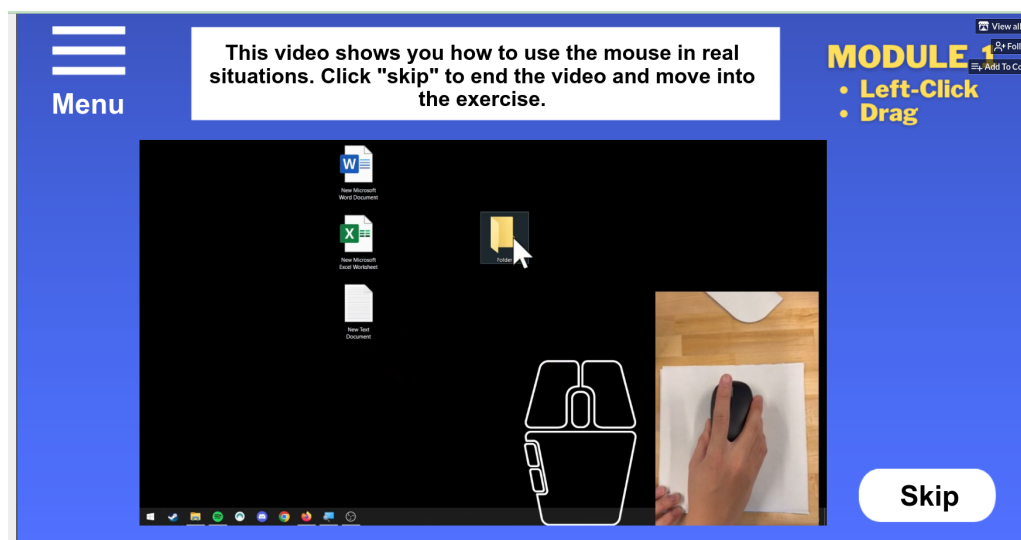


Figure 5 Caption: Module 1 video menu

Alt text: A screenshot of the Module 1 including the video, menu button and skip button The background is blue, and a text box with instructions is displayed, directing the user to click on the menu button to access the video content.

3.1 Configuration Considerations

To access this application, a user needs a laptop or a computer of any operating system and connected to wifi. A browser, of any type to open the application is mandatory since this app runs on a browser. Additionally, a mouse must be connected for maximum engagement for the users.

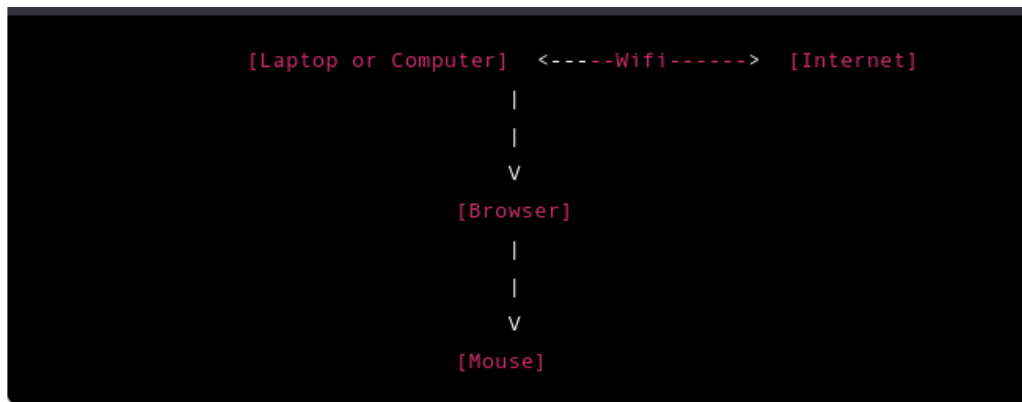


Figure 6: Graphical depiction of the system configuration

Alt text: A diagram showing the equipment and communication required to access the mouse skills app. A laptop or computer is connected to the internet via wifi, and a browser is used to access the app. A mouse is also required for optimal user engagement.

3.2 User Access Considerations

The application targets a specific user group based on the requirement from our client which is people who have no experience in using a mouse. This includes people with disabilities, people who have not had opportunities to use a laptop/computer, children who start learning how to use a mouse, etc. Although the application targets only one group of users, the users' age ranges and this app is made for all.

3.3 Accessing/setting-up the System

No user ID or login information(s) is needed for this system set-up.

1. Turn on your computer or laptop and wait for it to complete the operating set up.
2. Make sure an appropriate browser is installed on the device and access the link to the game.
3. Click on the link and open it. The application will pop up as a separate window browser.
4. Start using the application.

3.4 System Organization & Navigation

The application will be divided into major three different sections excluding the main page and menu and settings: Module, Puzzle, and Word. Each will have four different levels accompanying different mouse actions that the users will learn.

Module section will give the users visual instructions - videos - and will later prompt them with exercises corresponding to the current level for practice. Module 1 covers two actions: Left Clicking and Dragging actions. Module 2 covers one action: Double Clicking. Module 3 covers one action: Scrolling. Module 4 covers one action: Right Click, Copy and Paste.

After finishing each exercise from the Module, the user will be guided to the Puzzle section. Puzzle section will present the different puzzles with different difficulties throughout the levels and the necessary mouse actions will correspond to the content of the Module. The format of each puzzle is that there will be four different pictures each level. The user will solve the puzzle using the taught actions

At the beginning, the users will be presented with a home page. Considering that the user may not have any experience using a mouse, the application will guide the user to the first module after 8 seconds. If the user knows how to use a mouse, the choice is their whether they would like to go to the module or the game.

The home page is the main menu of the system, where users can access each section of the app. The home page should include clear and easy-to-understand icons or labels that link to the Module, Game sections. The home page can also include a section for user settings and preferences, such as sound settings or difficulty levels.

When the user first opens the app, the system should provide a brief tutorial or guidance on how to use a mouse. The tutorial should be easy to understand and help the user to familiarize

themselves with the basic functions of a mouse. After the tutorial, the user will be directed to the Module section where they can start learning and practicing mouse actions.

The navigation paths for each section should be clear and easy to follow. After completing an exercise in the Module section, the user will be guided to the Puzzle section, where they can apply the learned mouse actions to complete puzzles of increasing difficulty. The puzzles should be organized in a clear and intuitive manner, with each level building upon the skills learned in the previous levels.

In addition to the main sections, the system should include a menu or settings section where users can adjust the difficulty level, sound settings, or other preferences. The menu should be easy to navigate and include clear labels or icons for each option.

Overall, the system should be organized in a clear and intuitive manner, with easy-to-follow navigation paths and clear labels or icons for each function/feature. The system should be designed to help users learn and practice essential mouse skills in a fun and engaging way.

3.5 Exiting the System

To exit the application, the user can simply close the browser window they are using or close the tab by clicking on the “X” button (seen in red in the figure below) or close button on their browser for their tab or windows.

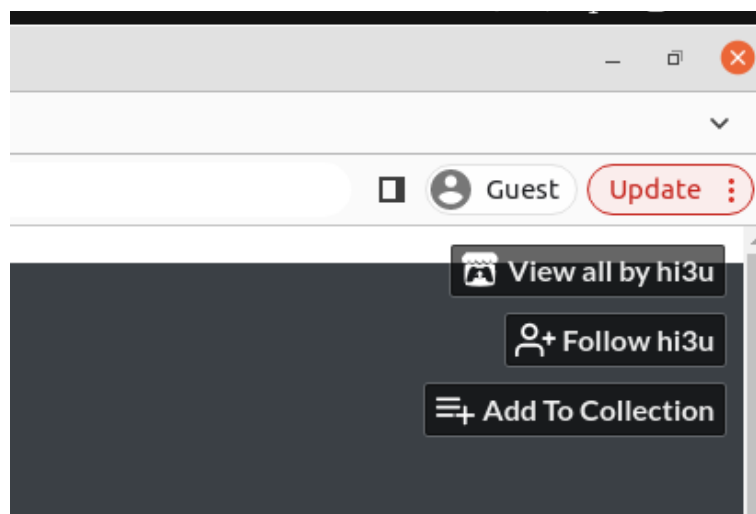


Figure 7 : Exiting the Mouse Skills App

Altext: A screenshot of the Mouse Skills app with a red "X" button visible in the top right corner of the window of a PC computer on chrome browser.

4 Using the System

The following subsections provide detailed, step-by-step instructions on how to use the various functions or features of the <System Name and/or Acronym>. ChatGpt Prompts of the Figure description and figure title were used to create alt-text and were modified accordingly.

Home Screen

The home screen is the main screen that appears when the user opens the app. The home screen allows the user to navigate to different sections of the app, including modules, puzzles, and words. The user can tap on the different sections of the app to access different features.

Modules

The modules section allows the user to access a series of mini-games designed to improve their mouse skills. Each module focuses on a different aspect of mouse control, such as accuracy, speed, or coordination. The user can select a module and complete a series of challenges to improve their mouse skills.

Puzzles

The puzzles section allows the user to access a series of puzzles that require them to use their mouse skills to complete. The puzzles may include things like moving objects, clicking on pieces, ect. The user must use their mouse to complete each puzzle. The system produces output in the form of feedback, to indicate the user's progress and completion.

Words

The words section allows the user to access a series of challenges designed to improve three main mouse functions namely; drag, drop and left click right click combination. The user must click and drag each letter to their appropriate place to create the word that represents the theme.

Game Results

After completing a module, puzzle, or word challenge, the user is presented with their results. The results screen shows the user's score, and button to go to the next Level unless the next level isn't available.

The game also include a menu where the user can navigate to different part of the game as well as a main landing page.

4.0 Main page and Menu

When the user first starts the application, the Main page will be presented.

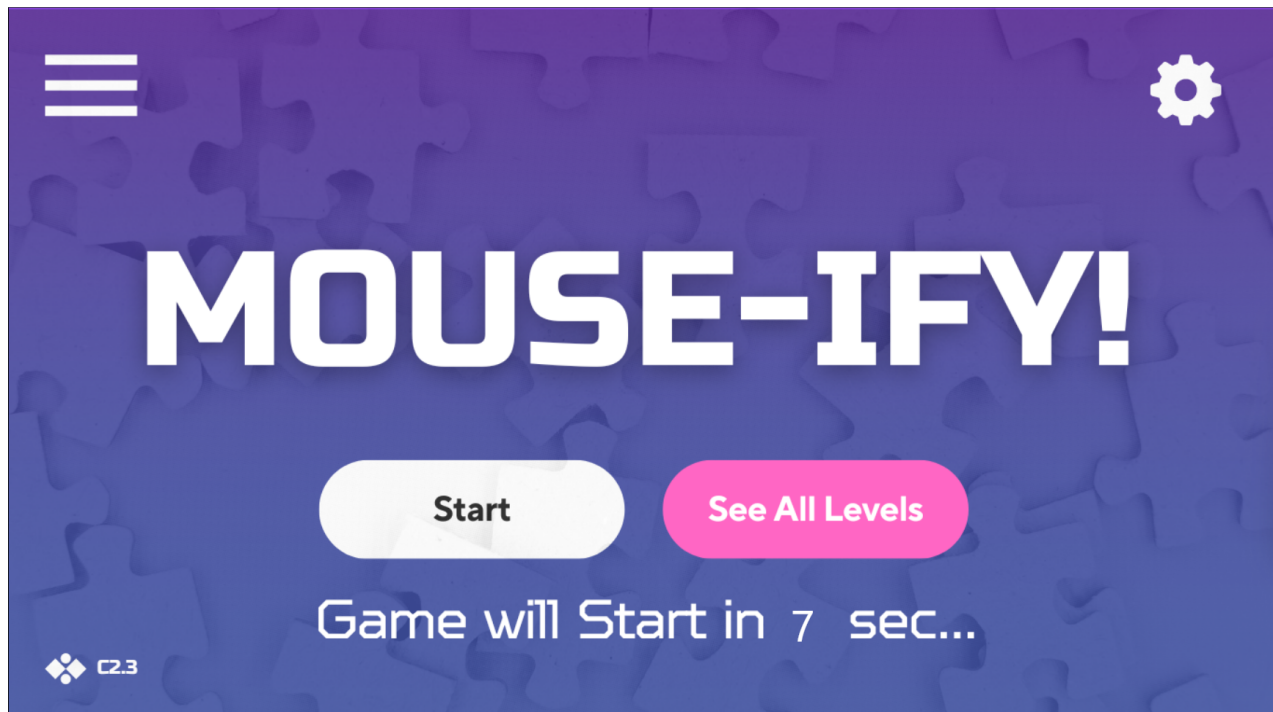


Figure 8. Main Page

Alt text: A screenshot of the main page of the Mouse Skills App, which features a blue background and a menu button in the top left corner. There is also a "Start" and "See All Level" button visible in the bottom center of the screen.

There is a countdown of 8 seconds. This accounts for users who do not have any experience using a mouse. After 8 seconds, the application will take the user to Module 1, which will be presented below. Same goes for if the user presses Start.

If the user presses See All Levels, the application jumps to the intermediate selection screen.

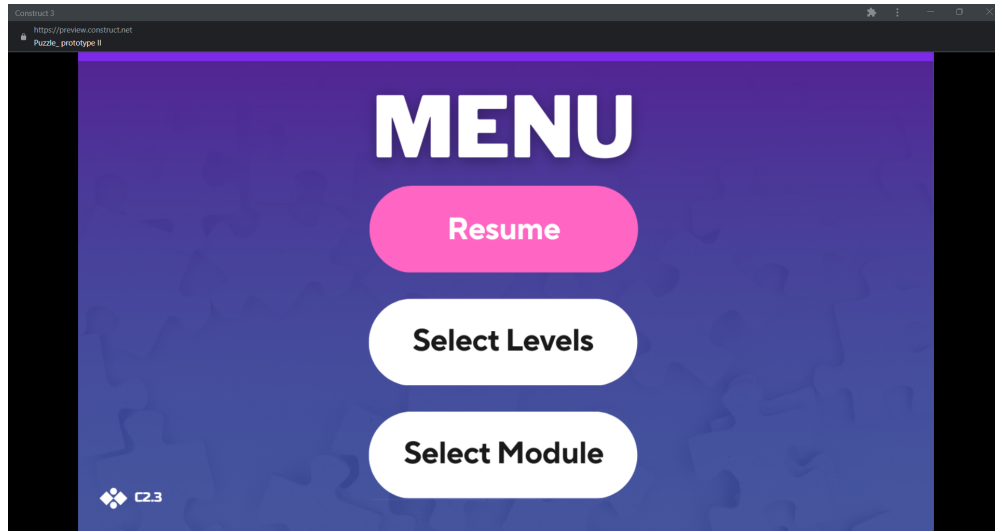


Figure 8.1. Menu

Alt text: A screenshot of the Mouse Skills App menu, which features a light blue background and several clickable buttons for different modules of the app.

Here, the user can choose to resume to the previous action, to select levels, or to select modules.

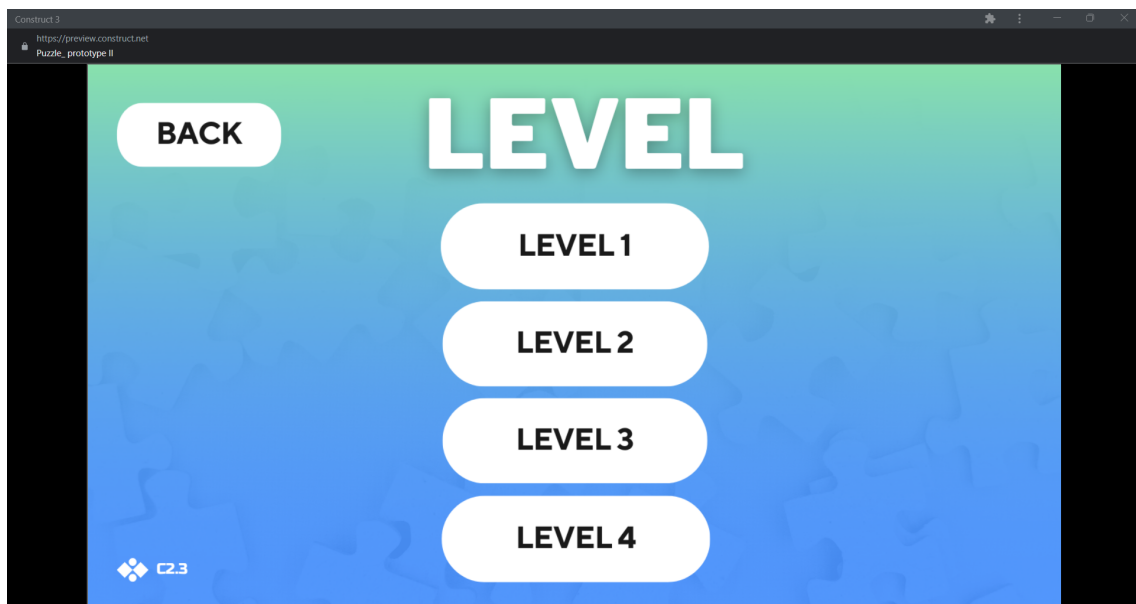


Figure 9. Level Options

Alt text: A screenshot of the Level Options page in the mouse skills app. The screen shows a menu with various options for selecting the level of difficulty for the mouse training game.

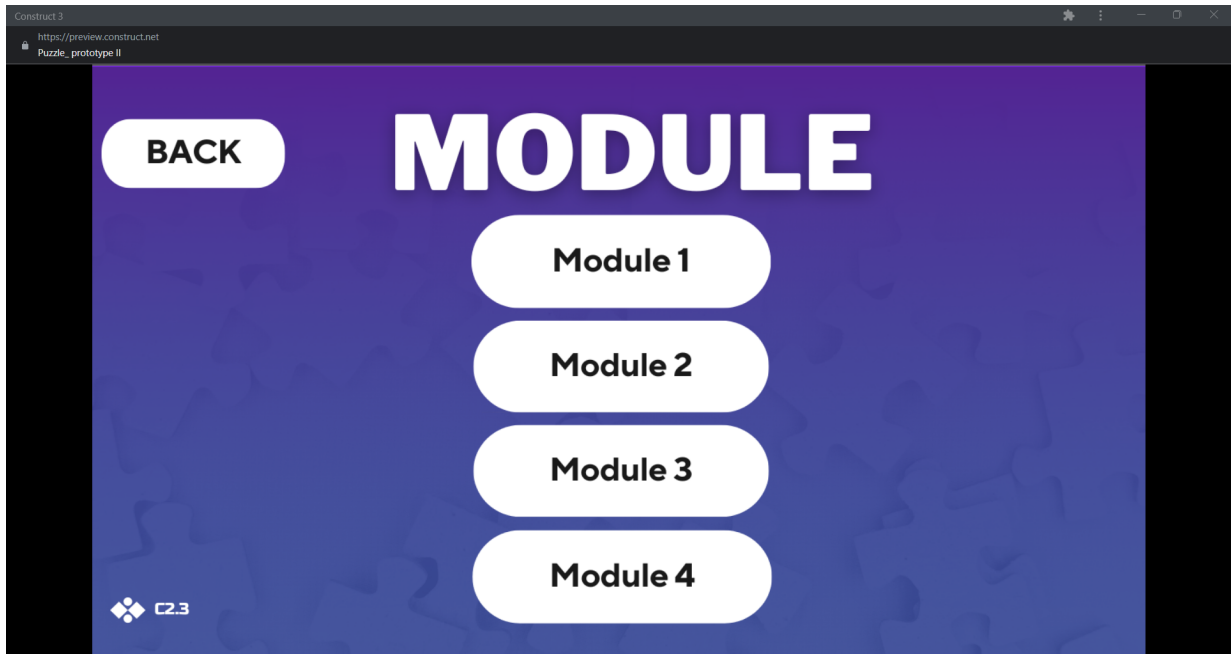


Figure 10. Module Options

Alt text: A screenshot of the different module options page in the mouse skills app. The page shows a list of available modules, including a brief description of each module and an icon representing the module's content.

4.1 Modules

We have four modules and each module has a corresponding demo video, in addition, each module contains a text introduction, users can choose one of these. Each module corresponds to a level.

For the first module: the user needs to know what drag & drop and how to do this, however, before the user starts doing exercise, there is a video about the drag & drop. If the user does not want to watch, then click the SKIP button in the upper right corner to skip the video.

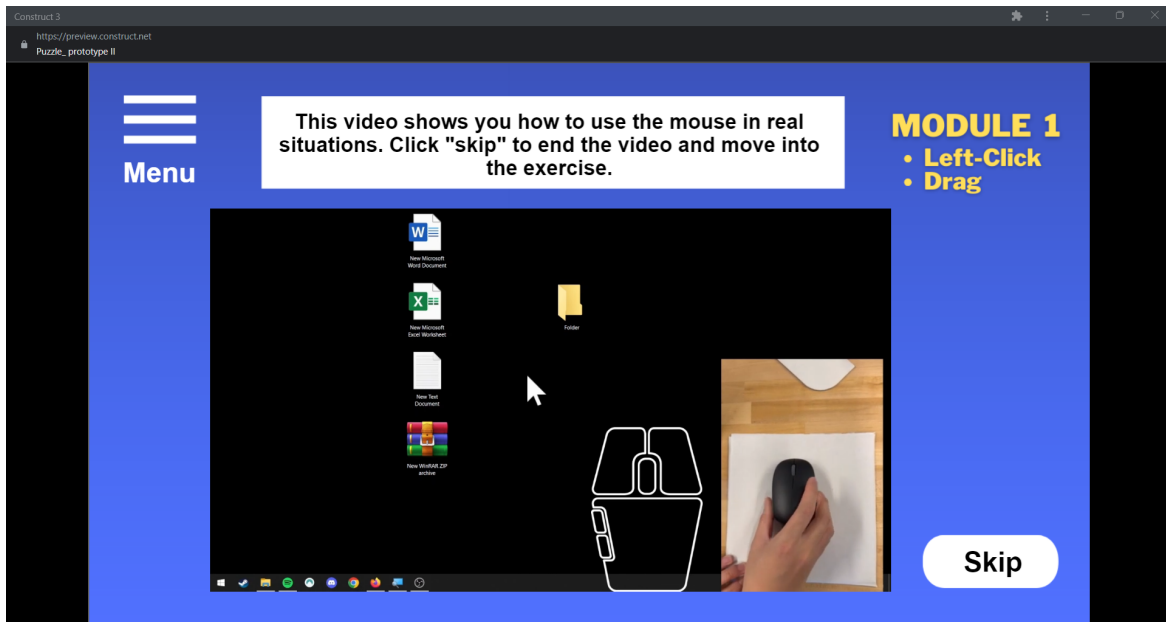


Figure 11. Module lv 1 Video

Alt text: A screenshot of a video in Module Level 1, showing a blue background with a menu button and a skip button. The video is demonstrating how to use the mouse in a game, with a cursor moving around the screen and clicking on various objects.

If the user has mastered then the system prompts a small exercise so that the user can get a first hand experience on how the actions will be implemented with clear instructions on the screen.

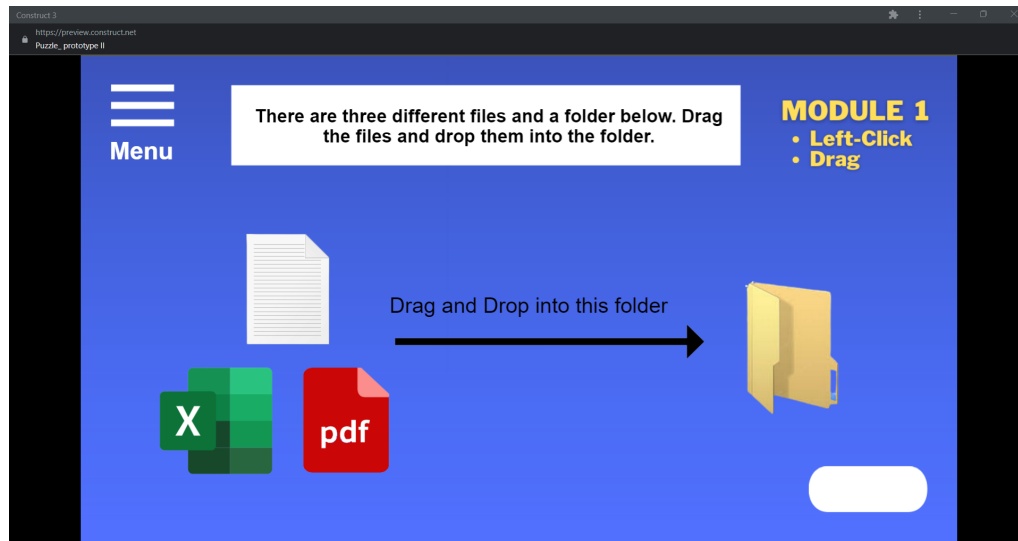


Figure 12. Module lv1 Exercise

Alt text: A screenshot of the module level 1 exercise interface of the application, showing files the user can interact with using a mouse. In the upper left corner, there is a button labeled "Menu" to access the menu

For the second level, the implementation and the visualization is identical to the first level. However, it will take care of teaching and exercising with Double-Clicking added.

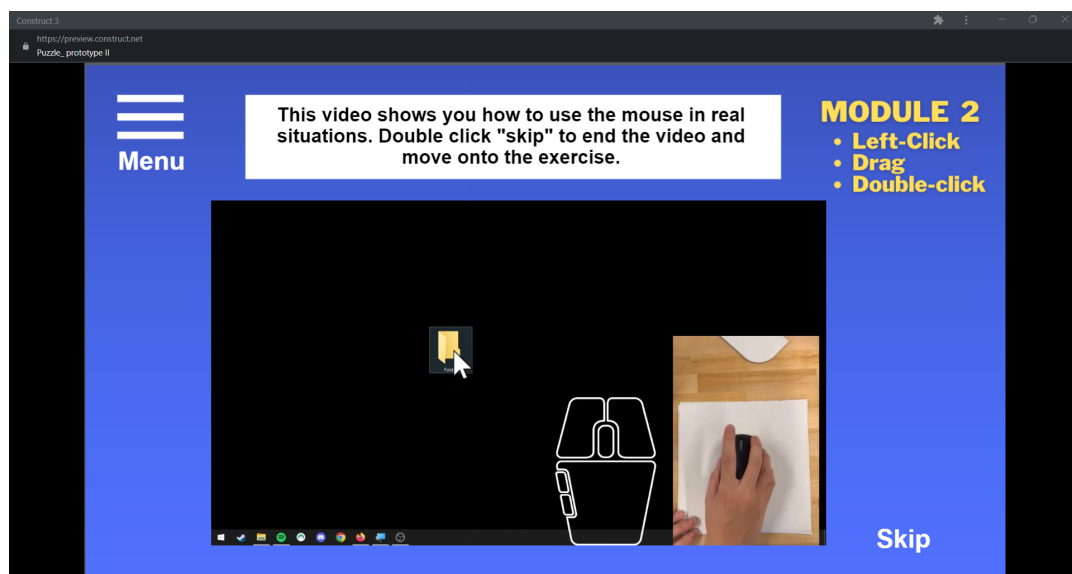


Figure 13. Module lv2 Video

Alt text: A screenshot of Module Level 2 video in the mouse training application. The video is displayed in the center of the screen

The user can choose to watch the video or to skip the video. When the video is finished, or when the user decides to skip, they will be prompted with a little action to continue the exercise.

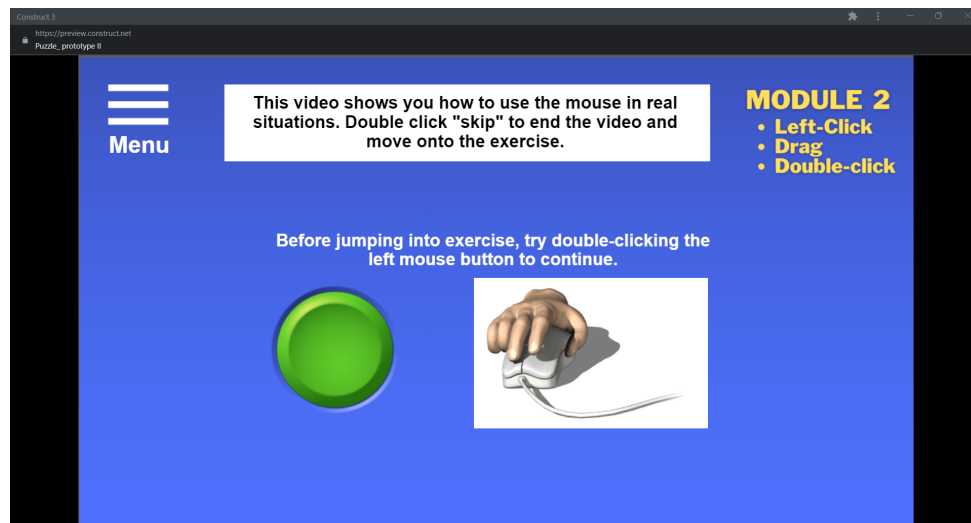


Figure 14.1. Module lv2 Exercise part 1

Alt Text: A screenshot of the second level exercise in the mouse training game. There are instructions on the center-side of the screen.

Double Clicking the green button leads to exercise.

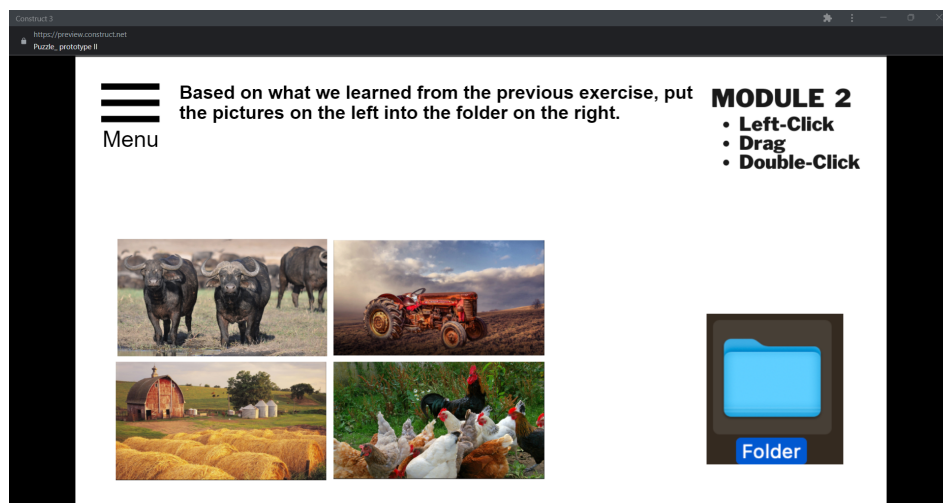


Figure 14.2. Module lv 2 Exercise part 2

Alt text: A screenshot of the second part of the exercise in Module Level 2. The screen shows a white background, the puzzle picture (farm) and file folder on the right corner.

After finishing the exercise, the user will again be prompted with an action to proceed.

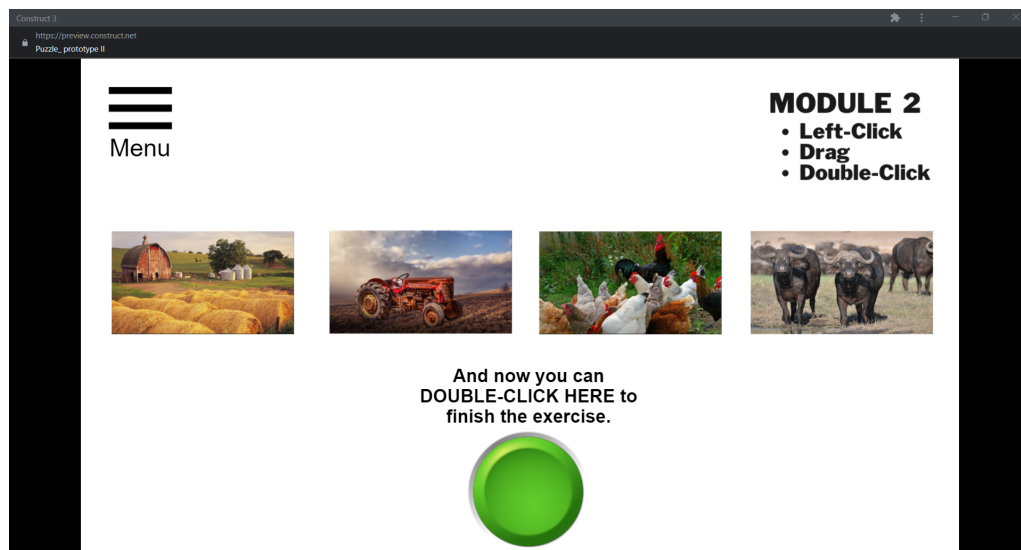


Figure 14.3. Module lv2 Exercise part 3

Alt text: A screenshot of Module Level 2 Exercise showing 4 pictures of the farm and a green button.

For the third module, the implementation and the visualization is identical. This module covers Scrolling added.

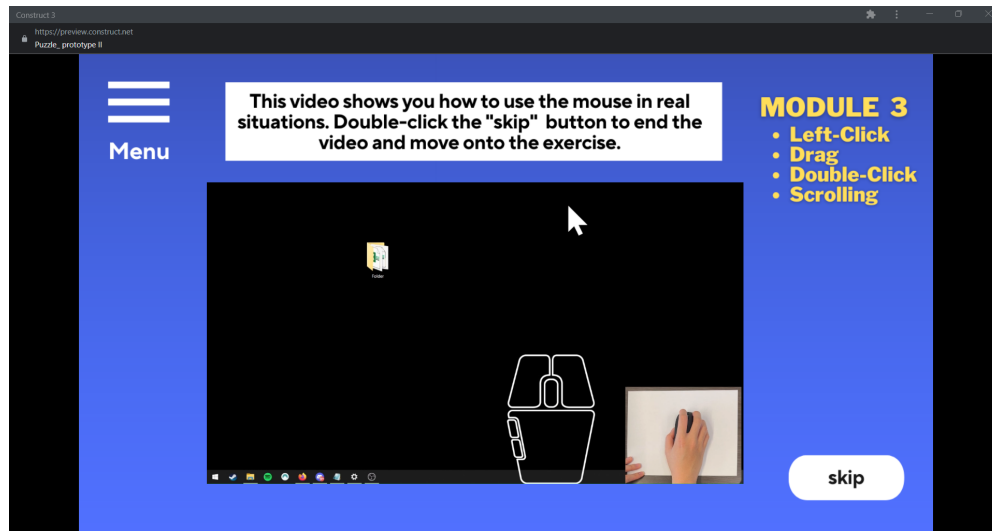


Figure 15. Module lv3 Video

Alt text: A screenshot of Module level 3 video, showing the video content and skip button.

The exercise for this module will be - first dragging a file into a folder. Then, double click to open the folder and double click to open the file.

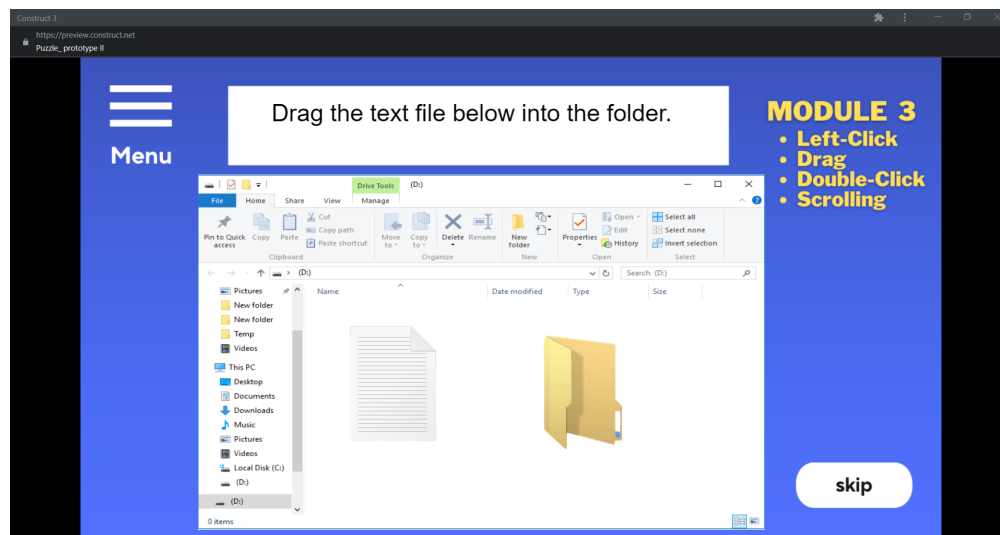


Figure 16.1. Module lv3 Exercise part 1

Alt text: A screenshot of Module Level 3 Exercise Part 1. The screen shows a prompt asking the user to Drag and Drop.

After opening the file, the application jumps to a document with text for the user to scroll.

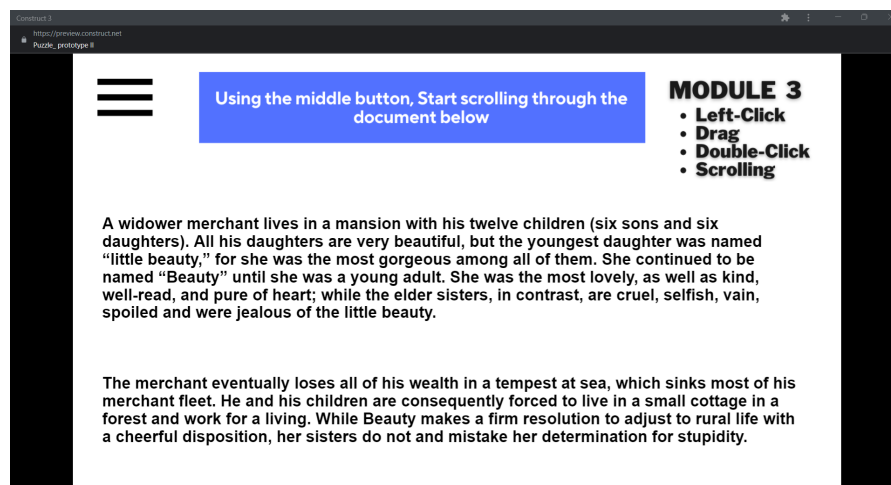


Figure 16.2. Module lv3 Exercise part 2

Alt text: A screenshot of Module Level 3 Exercise Part 2. The image shows a section of scrolling text containing instructions for module 3.

Moving to Module 4, this module will cover Right Clicking for Copy and Paste actions added in on top of the previous actions.

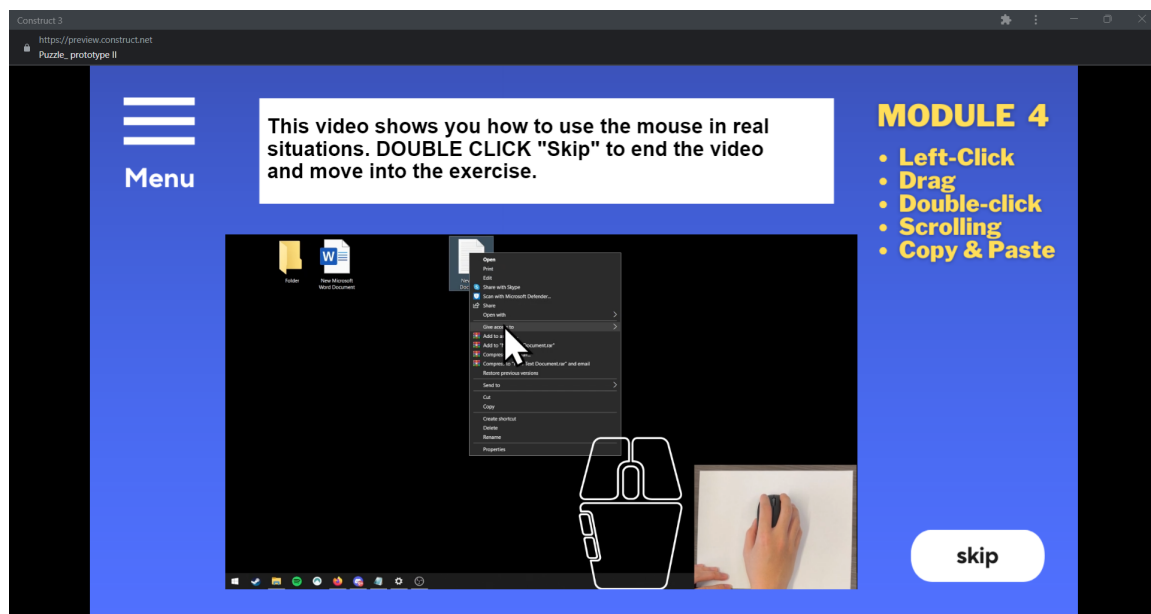


Figure 17. Module lv4 Video

A screenshot of the Module level 4 of the application. The background is blue and features a menu and skip button

The exercise will be copying and pasting a file and a folder.

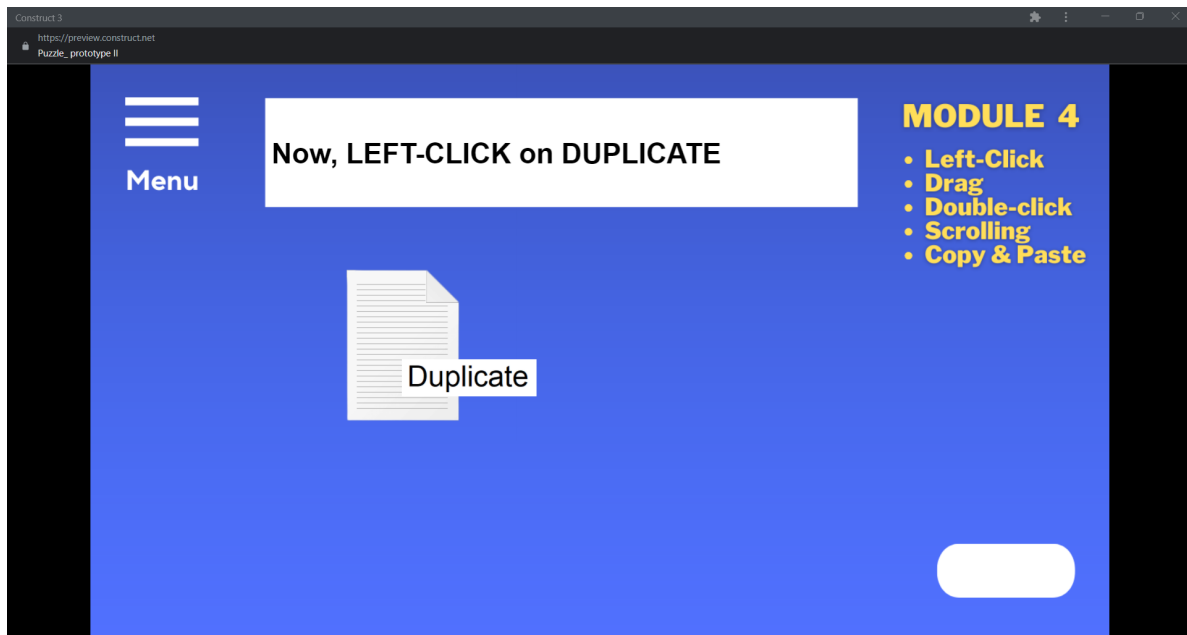


Figure 18.1. Module lv4 Exercise part 1

Alt text: A screenshot of the first part of a level 4 exercise in the educational application. Screen shows a doc file with a duplicate button.

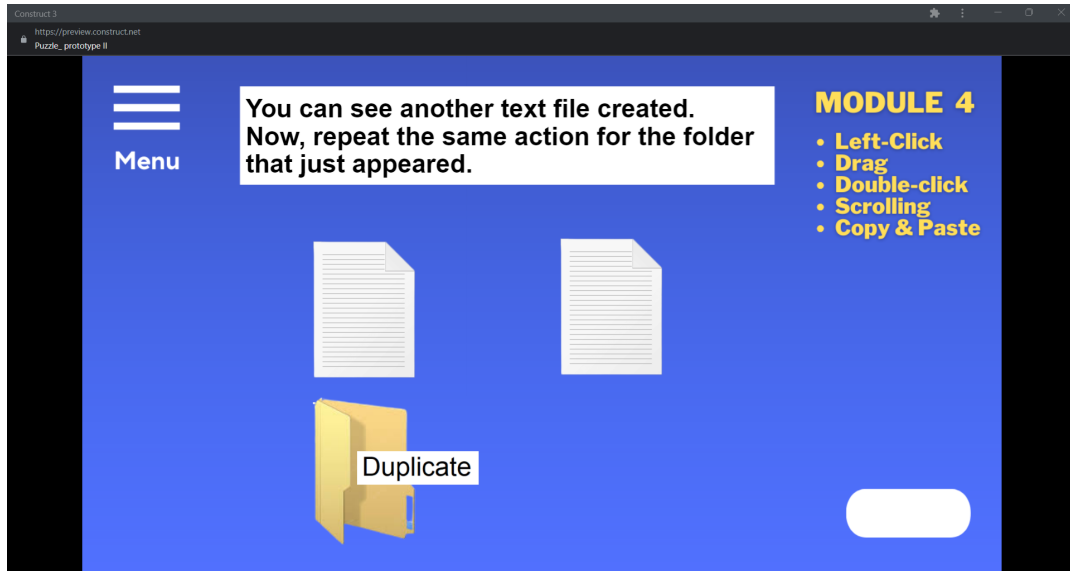


Figure 18.2. Module lv4 Exercise part 2

Alt text: A screenshot of the first part of a level 4 exercise in the educational application. Screen shows a doc file with duplicate button and folder.

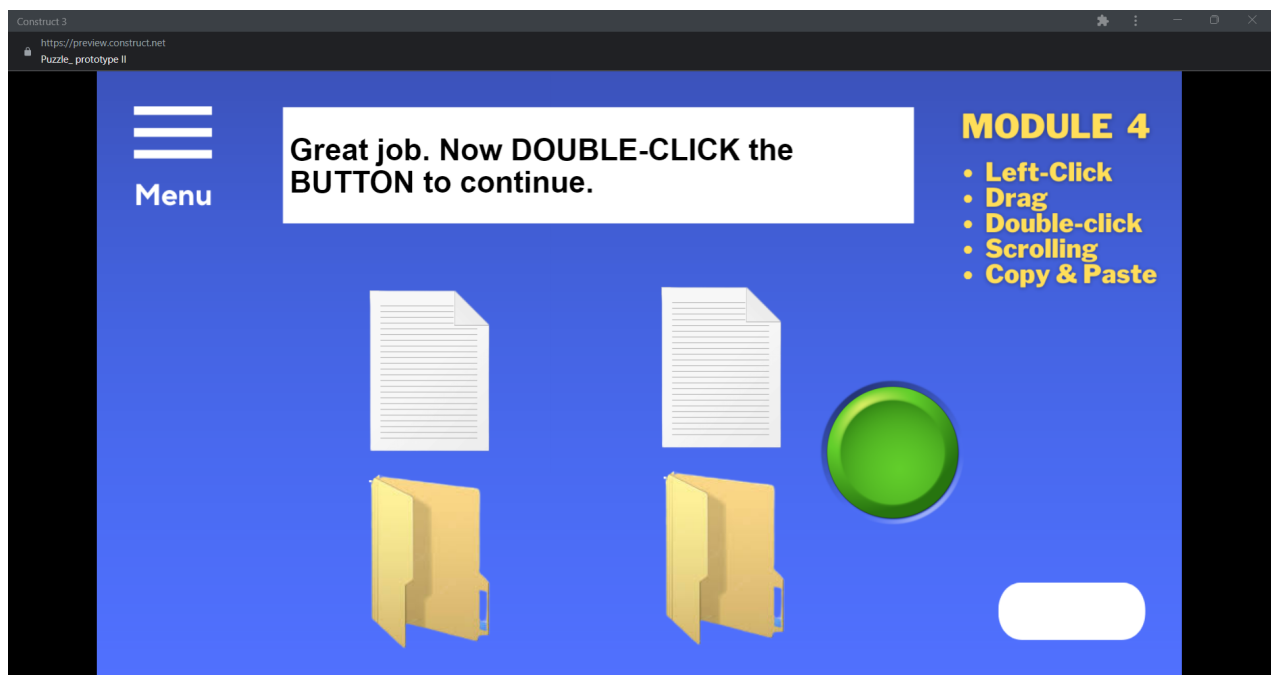


Figure 18.3. Module lv4 Exercise part 3

Alt text: A screenshot of the first part of a level 4 exercise in the educational application. Screen shows a doc file with duplicate button and folder. And the green button to continue.

After finishing the Module section for each level, the user will proceed to the Puzzle section to apply what they just learned into solving the puzzle

4.2 Puzzle

In order for users to use the drag and drop function better, we have designed a puzzle game where users need to stitch scattered pictures into a complete picture.

The puzzle game has 4 different levels with the complexity of the game increasing with the levels.

- **Level 1**

For the completion of this level, the user needs to know how the drag and drop functions of the mouse work. The user will have to left click each puzzle piece, drag it to the right position and drop it. The puzzle has eight pieces and the user should be able to successfully complete it after watching the tutorial and doing the practice exercises in module 1.

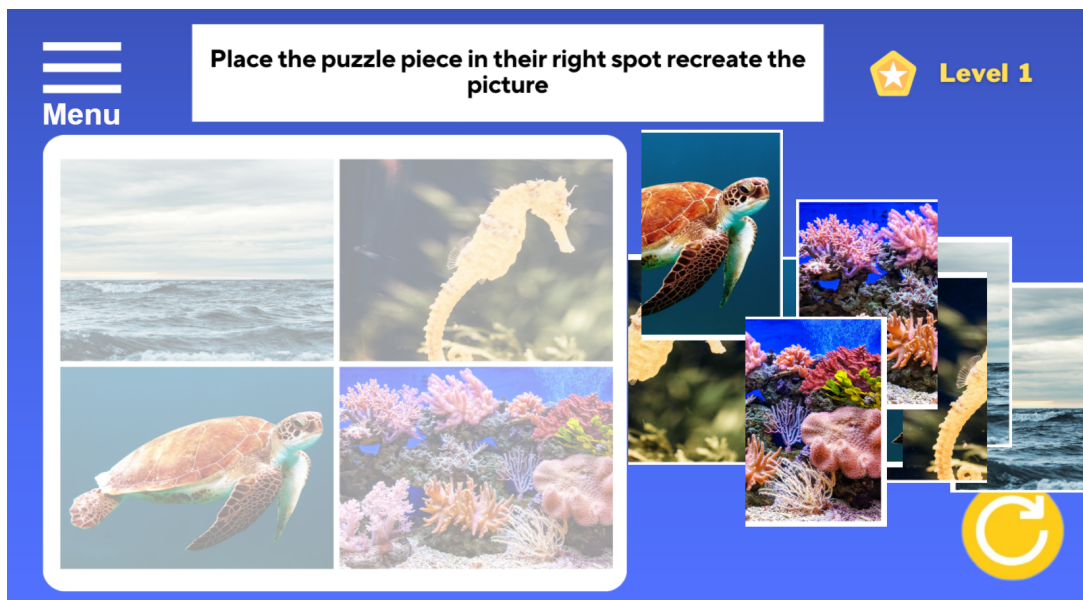


Figure 19 lv1 Puzzle

Alt text: A screenshot of a puzzle from Level 1 of Mouse-ify. The puzzle has a grid of squares with a background image. There are also icons for undo and restart actions in the top right corner of the screen.

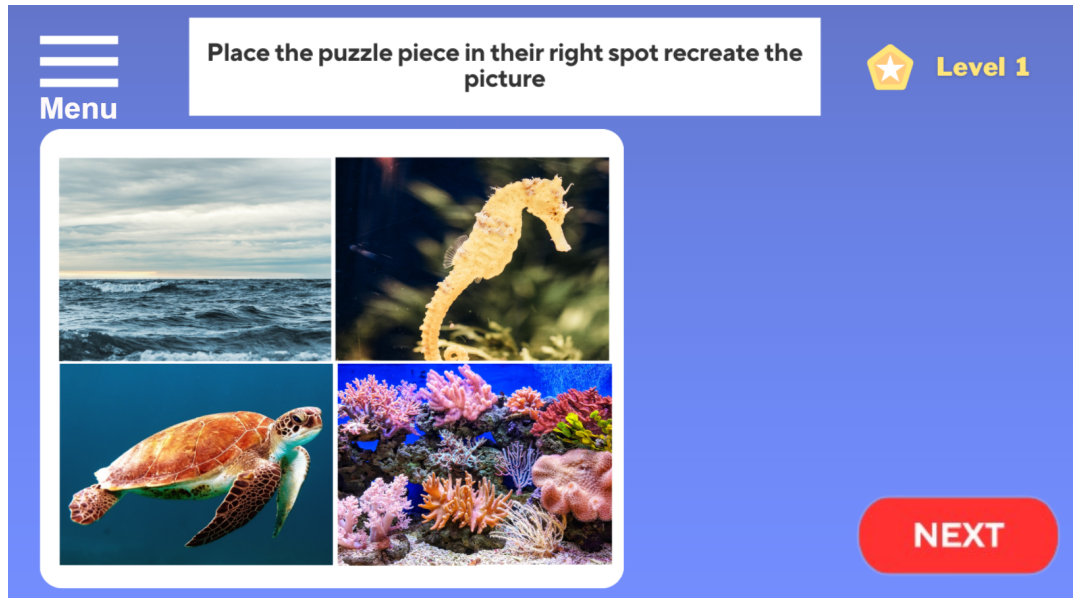


Figure 19.1 lv1 Puzzle Complete

Alt text: A screenshot of a puzzle from Level 1 of Mouse-ify. The puzzle has a grid of squares with a background image and the completed button.

- **Level 2**

This level also has an eight piece puzzle. In order for the user to successfully complete the level, the understanding of the drag, drop and double click functions of the mouse is necessary. All the pieces will be similar at the start of the game. The user will have to double click on each puzzle piece to reveal one of the 8 pieces needed to complete the puzzle. The objective is to allow the user to practice by repeating the same mouse functions multiple times. In order to successfully complete the puzzle, the user needs to know how the drag, drop and double right click mouse functions work. The user should be able to complete the puzzle after watching the tutorial and doing the practice exercise in module2.



Figure 20 lv 2 Puzzle

Alt text: A screenshot of a puzzle from Level 2 of Mouse-ify. The puzzle has a grid of squares with a background image. There are also icons for undo and restart actions in the top right corner of the screen.



Figure 20.1 lv 2 Puzzle complete

Alt text: A screenshot of a puzzle from Level 2 of Mouse-ify. The puzzle has a grid of squares with a background image and the completed button.

- **Level 3**

This level is more complex compared to the previous levels as it includes twelve pieces. Similarly to level 2, all the pieces will be similar at the start of the game. The user will have to double click on each puzzle piece to reveal one of the 12 pieces needed to complete the puzzle. The objective is the same as level 2. In order to successfully complete the puzzle, the user needs to know how the drag, drop and double right click mouse functions work.



Figure 21 lv 3 Puzzle

Alt text: A screenshot of a puzzle from Level 3 of Mouse-ify. The puzzle has a grid of squares with a background image. There are also icons for undo and restart actions in the top right corner of the screen.

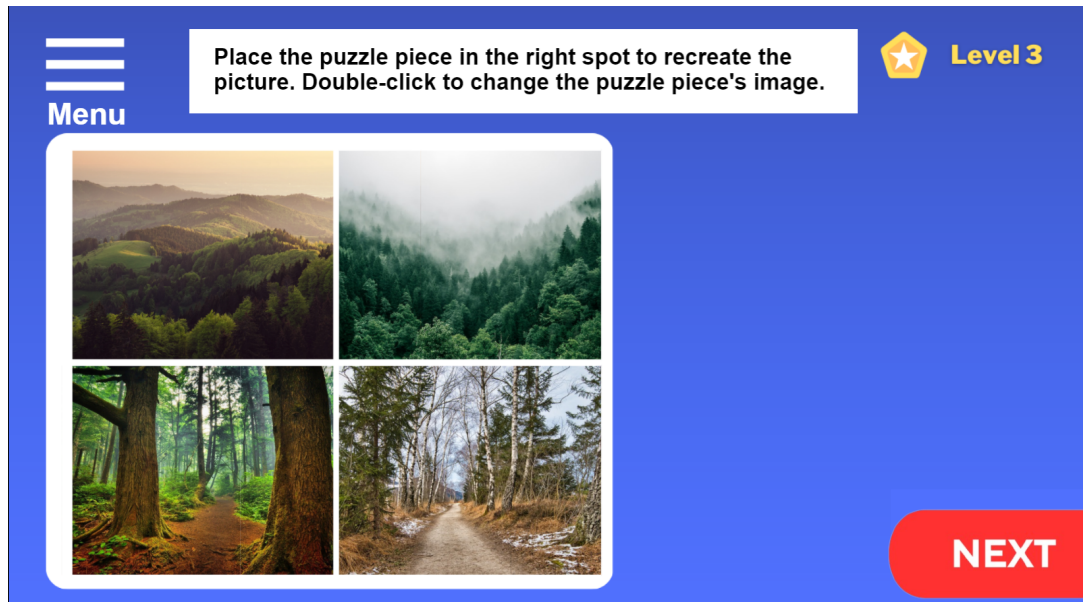


Figure 21.1 lv 3 Puzzle Complete

Alt text: A screenshot of a puzzle from Level 1 of Mouse-ify. The puzzle has a grid of squares with a background image. Completed Screen.

- **Level 4**

This level is the last level of the game which has twenty pieces. This level works similarly to level 3 with the objective of allowing the user to practice more and refine their mouse skills. After the completion of this level, the user should be able to use all the basic mouse functions namely drag, drop, left click, scroll, right click and double click. The puzzles might not cover all these functions. The scrolling and right click left click combination are covered in the module and word parts of the game.



Figure 22 lv 4 Puzzle

Alt text: A screenshot of a puzzle from Level 4 of Mouse-ify. The puzzle has a grid of squares with a background image. There are also icons for undo and restart actions in the top right corner of the screen.



Figure 22.1 lv 4 Puzzle Complete

Alt text: A screenshot of a puzzle from Level 1 of Mouse-ify. The puzzle has a grid of squares with a background image. Completed screen

4.3 Word

Like previous sections, the word component of the game is included in all four levels as depicted in figures 6 through 9 below. The user has to drag and drop the letters into their corresponding boxes. From these layouts, the user can gain access to the Menu page by clicking on “Menu”. They can also reset the level by pressing the button at the bottom right corner. Once the puzzle is completed, a “Next” button will appear to allow the user to move on to the next level.

Once a letter is dropped into the correct box, the box will have a blue frame and the letter will be locked in the correct position. If a letter is dropped into the wrong box, the box’s frame will be red to notify the user that it is not the correct combination.

Once all frames are blue and word combination is correct, users will be notified that they have successfully completed the puzzle.

- Level 1

This level consists of the word “Ocean”, 6 letters.

- Level 2

This level consists of the word “Farm”, 4 letters.

- Level 3


This level consists of the word “Forest”, 6 letters.

- Level 4

This level consists of the word “Universe”, 8 letters. To increase difficulty here, the user will need to right click on the E in order to duplicate it.

Drag the letters in the correct order to form the word representing the image.

Menu



N

A

E

C

O




Figure 23. lv 1 Word

Alt text: "A puzzle for Level 1 Word Section is shown in the figure. The puzzle consists of a grid of blank boxes, with scattered letters placed around it. The user is expected to fill in the blank boxes with the scattered letters to form a word. There is a placeholder for each letter in the word, and the user needs to drag and drop the letters onto the placeholders in the correct order to complete the puzzle."

Menu

O

C

E

A

N



NEXT

Figure 23.1. lv 1 Word Complete

Alt text: "A puzzle for Level 2 Word Section is shown in the figure. The puzzle's full picture shown with a "Next" button."

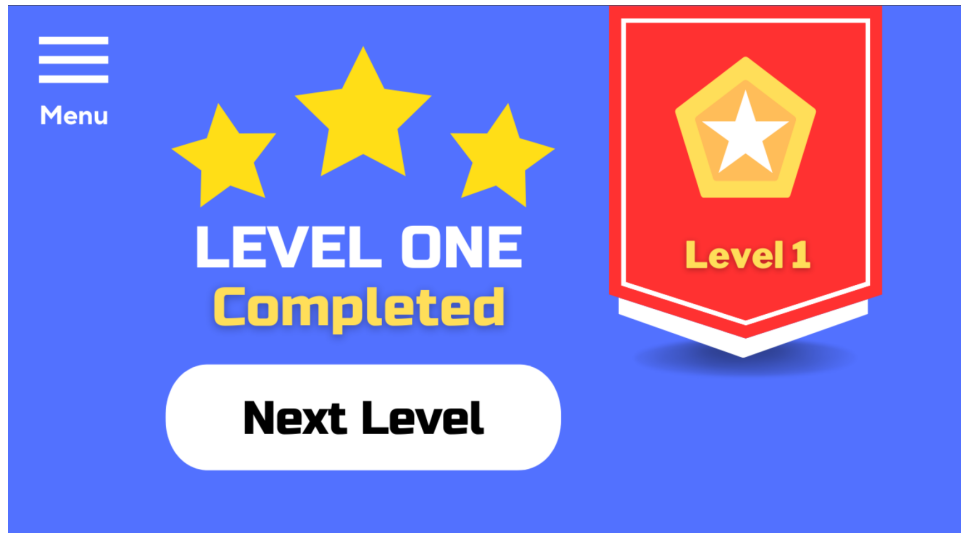


Figure 23.2. lv 1 Next Level Screen

Alt text A screenshot of the Level Completed screen in the Mouse-ify game. The background is a colorful backdrop with the words "Level Completed" displayed in the center. A white button with the text "Next Level" is located at the bottom

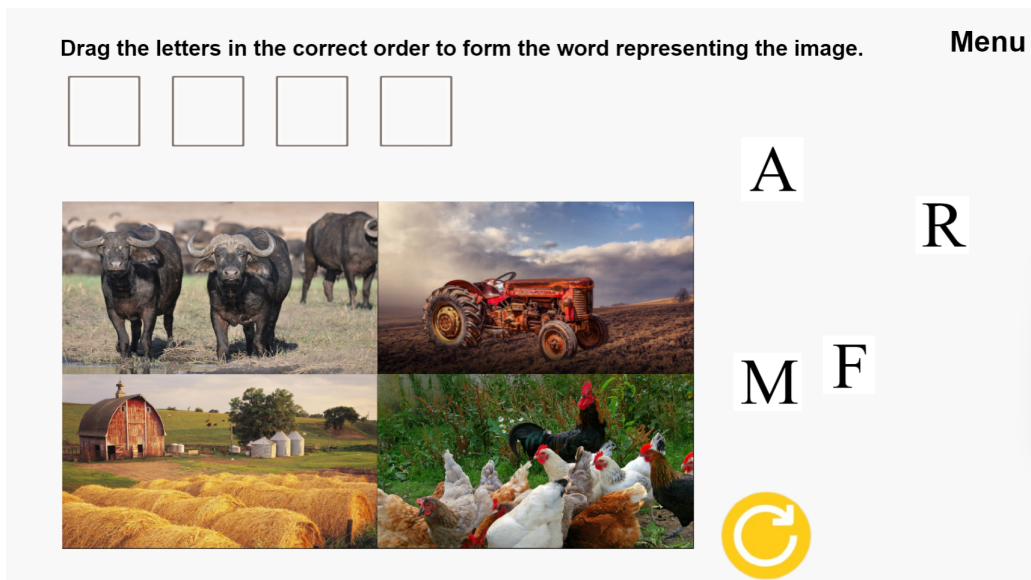


Figure 24. lv2 Word

Alt text: "A puzzle for Level 2 Word Section is shown in the figure. The puzzle consists of a grid of blank boxes, with scattered letters placed around it. The user is expected to fill in the blank boxes with the scattered letters to form a word. There is a placeholder for each letter in the word, and the user needs to drag and drop the letters onto the placeholders in the correct order to complete the puzzle."

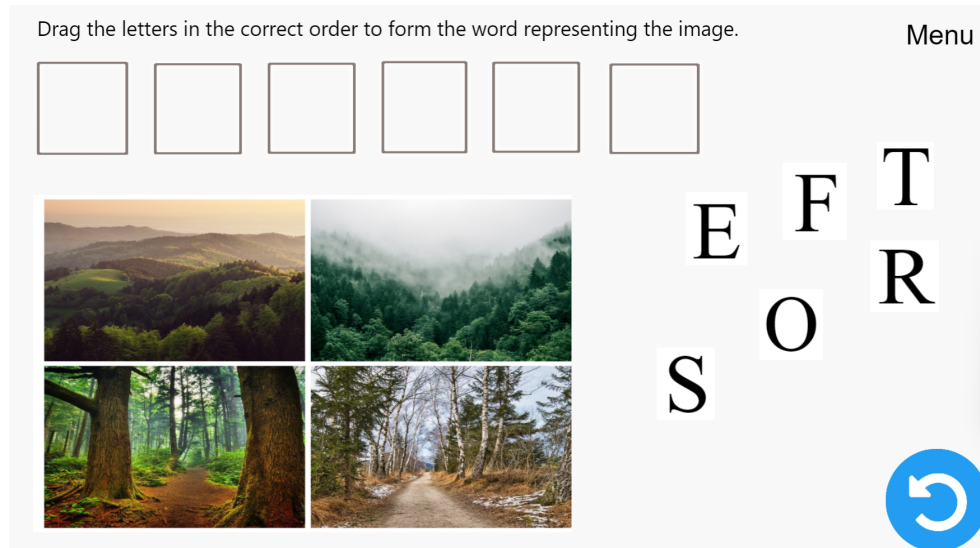


Figure 25. lv 3 Word

Alt text: "A puzzle for Level 3 Word Section is shown in the figure. The puzzle consists of a grid of blank boxes, with scattered letters placed around it. The user is expected to fill in the blank boxes with the scattered letters to form a word. There is a placeholder for each letter in the word, and the user needs to drag and drop the letters onto the placeholders in the correct order to complete the puzzle."

Drag the letters in the correct order to form the word representing the image.

Menu

Hint : Right click on letter "E" to



Figure 26. lv 4 Word

Alt text: "A puzzle for Level 4 Word Section is shown in the figure. The puzzle consists of a grid of blank boxes, with scattered letters placed around it. The user is expected to fill in the blank boxes with the scattered letters to form a word. There is a placeholder for each letter in the word, and the user needs to drag and drop the letters onto the placeholders in the correct order to complete the puzzle."

5 Troubleshooting & Support

App Crashes

If the app crashes or becomes unresponsive, the user should close the app and restart it. If the issue persists, the user should try restarting their device. If the problem still occurs, the user can contact customer support for further assistance.

In-Game Errors

If the user encounters an error while playing a game, they should try restarting the game and attempting to complete the challenge again. If the issue persists, they can try resetting the app or device. If the problem still occurs, they can contact customer support for further assistance.

Data Loss

If the user loses their progress or data within the app, they can try logging out and logging back in to see if the data is restored. If the issue persists, they can contact customer support for further assistance.

Bugs or Glitches

If the user encounters a bug or glitch within the app, they can try restarting the app or device. If the issue persists, they can report the bug to customer support with a detailed description of the issue and any relevant screenshots or error messages.

5.1 Error Messages or Behaviors

Most issues will occur due to internet connection, web browser issues or with our third party application. If any issues with wifi connection persist, please contact your service provider.

“Server Error”

This occurs when there is a problem with the server. This may most likely be linked with our third party application, Construct 3.

“Page not loading properly”

This error occurs when the web page doesn't load properly, or the display incorrectly due to compatibility issues with the website or browser.

Correction: Refreshing the page. If the problem continues, try closing the web browser tab or the browser entirely, and accessing the web page again at a later time.

5.2 Special Considerations

No regular special consideration is needed for this application

5.3 Maintenance

No regular maintenance is needed for this application.

5.4 Support

There are no emergencies with this application.

6 Product Documentation

The software design is the most critical aspect of building a mouse skill app prototype. The prototype can be built using any software development methodology. The programming software development tools chosen will depend on the specific requirements of the application, such as construct 3.

In the case of a mouse skill app, the design should be created to test and improve the user's motor skills. The software should have a range of difficulty levels and provide feedback to the user to track their progress. The feedback should be presented in a way that is easy to understand and actionable.

Design Considerations:

Several design considerations are critical to the success of a mouse skill app. These considerations include the following:

Responsiveness:

It is critical for the app to be responsive to the user's device and screen size to provide an optimal user experience. This means that the app should be optimized for both desktop and mobile devices, with scalable design elements that adjust to different screen sizes. Additionally, the app should load quickly and have fast response times to user actions.

Usability:

Usability is a key consideration for any app, including a mouse skill app. The app should be easy to use and navigate, with intuitive controls and menus that are easy to understand. Clear instructions and feedback should be provided to guide the user through the different sections and levels. The user interface should be visually appealing, with clear graphics and text that are easy to read.

Scalability:

The app should be designed to accommodate a growing number of users, levels, and game modes. This means that the app should be scalable, with the ability to add new content and features as needed. The app should be designed with future growth in mind, with flexible architecture that can accommodate new functionality and larger user bases.

Security:

Security is a critical consideration for any app that involves user data or authentication. The app should be designed with security in mind, including secure user

authentication and data encryption. User data should be protected from unauthorized access and the app should comply with industry-standard security protocols.

Material Selection:

Since this is a software application, there are no material selection considerations. However, it is important to choose the appropriate software development tools and platforms to ensure optimal performance and scalability of the app. The development team should have expertise in the relevant programming languages, frameworks, and tools to ensure that the app is developed efficiently and effectively.

6.1 Application

6.1.1 BOM (Bill of Materials)

Table 2. Bill Of Material

Material	Type	Cost	Description
Construct 3	Software	\$28.99 / month	Game making software.
Figma	Software	Free	Wireframe maker
Canva	Software	Free	IU

6.1.2 Equipment list

Since this is a software project, the only materials used was Construct-3 as well as access to a personal computer.

6.1.3 Instructions

Step 1: Creating a new project

Open Construct 3, click on "New Project" and give it a name. Then, choose a template or start with a blank project. In this case, we'll start with a blank project.

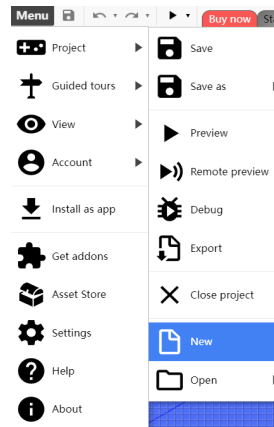


Figure 27. Creating a Project

Alt text: A screenshot of the Construct 3 game engine with the project creation window open. The user is prompted to enter the project name, layout size, and other settings before creating the project.

Step 2: Adding assets

Now we need to add assets such as images and sounds to the project. Click on the "Project" tab on the right-hand side, then click on "Add new object". Choose "Sprite" and click "OK". Then, choose an image file for your sprite. Repeat this step for all the objects you want to add to your game.

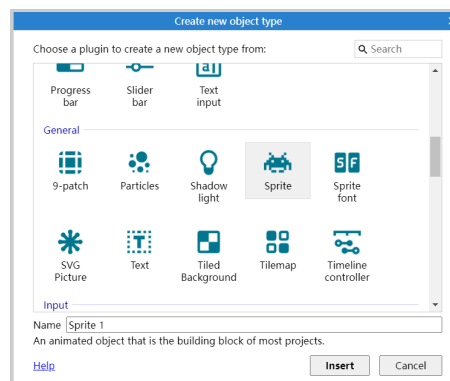


Figure 28. Add Sprite

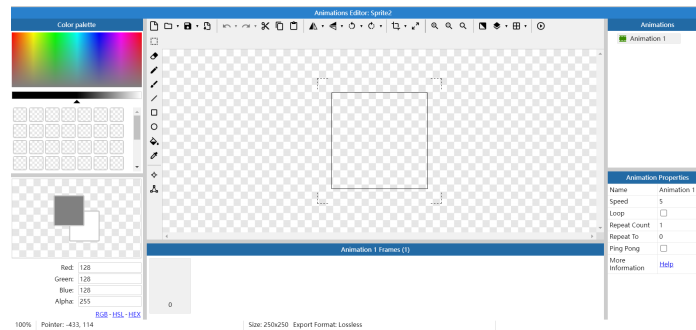


Figure 28. Set Sprite

Alt text: A screenshot of the Construct 3 game engine with the sprite creation window open. The user is prompted to enter the sprite name, click the blank area to create a sprite and set data on the sprite editor.

Step 3: Creating layouts

Next, we'll create a layout for our game. Click on the "Layouts" tab, then click on "Add new layout". Give the layout a name, then drag and drop objects onto the layout.

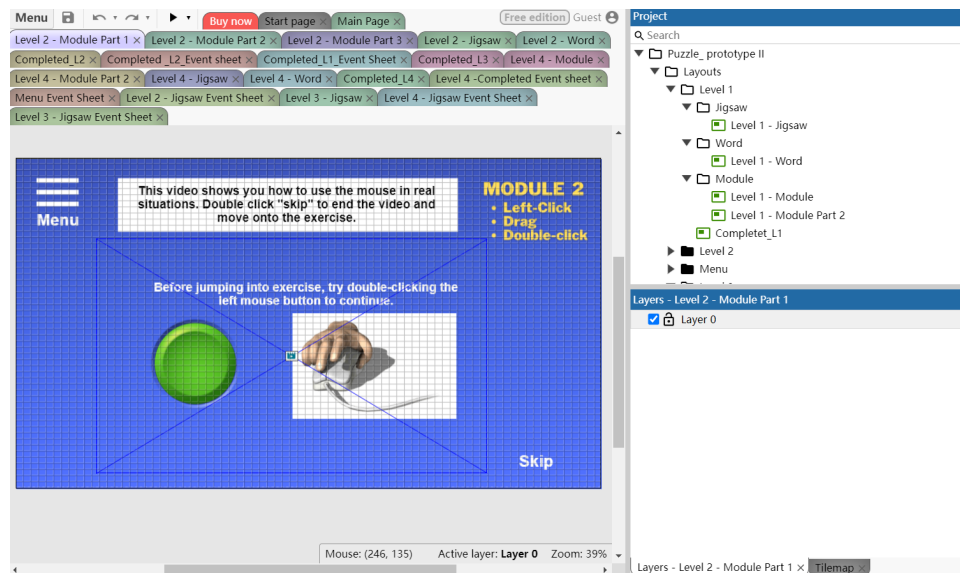


Figure 29. Creating Layouts

Alt text: A screenshot of Construct 3 showing the "Layout View" screen. The screen is split into two parts, with the left side showing a list of layouts and the right side showing the selected layout with a grid and several objects.

Step 4: Adding behaviors

Now it's time to add behaviors to our objects. Click on an object, then click on "Behaviors" on the left-hand side. Choose a behavior, such as "Drag and Drop", and configure it to your liking.

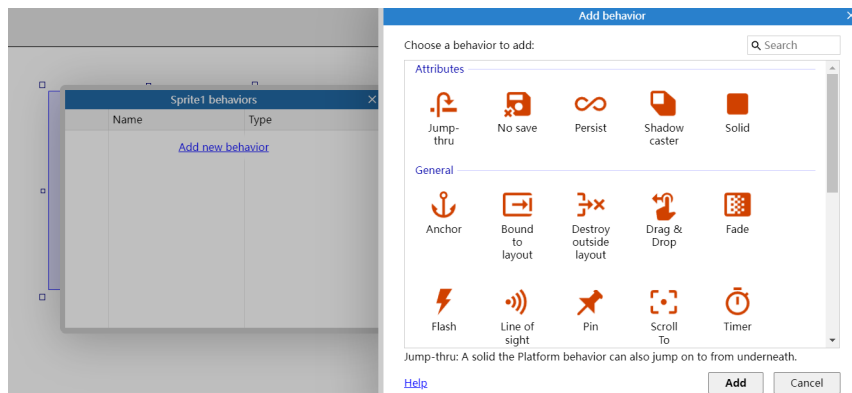


Figure 30. Add Behaviors

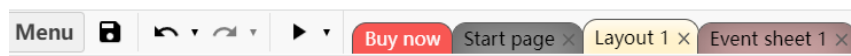
Alt text: A screenshot of Construct 3 showing the "behaviors" window. The window is split into two parts, with the left side showing the sprite behaviors and the right side showing behaviors that can be used on sprite.

Step 5: Creating events

Events are the logic of our game. Click on the "Events" tab on the left-hand side, then click on "Add Event". Choose a condition, such as "On Start of Layout", then choose an action, such as "Spawn Object". Configure the event to your liking.

Step 6: Testing the game

Click on the "Preview" button on the top-right corner of the screen to test your game. Playtest it and make any necessary changes.



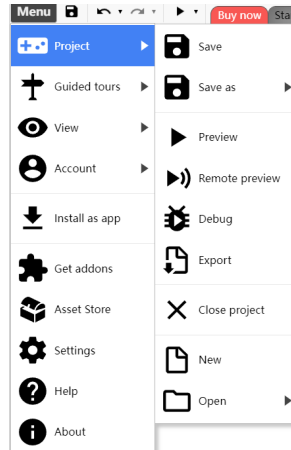
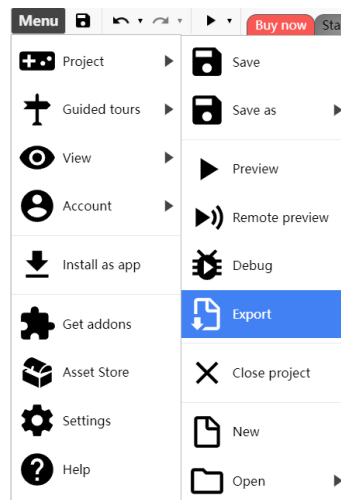


Figure 31. Testing Game

Alt text: A screenshot of Construct 3 showing the "Preview. There are two ways to playtest game.

Step 7: Exporting the game

Once you're satisfied with your game, it's time to export it. Click on "File" on the top-left corner of the screen, then click on "Export". Choose the platform you want to export to, then follow the prompts to complete the export process.



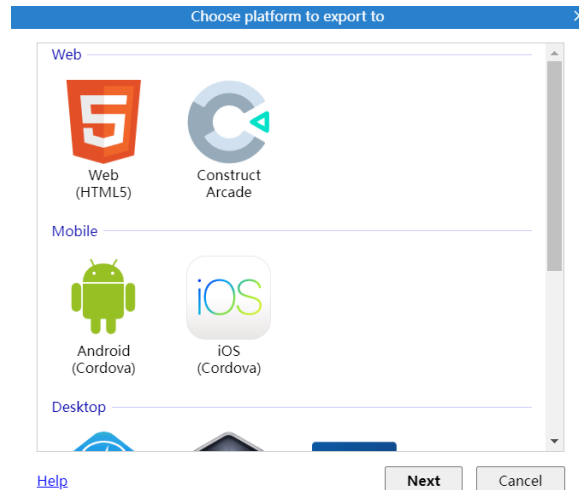


Figure 32. Export Game

Alt text: A screenshot of Construct 3 showing how to choose the output game form.

Settings

The steps of making the setting part have added several text descriptions on the basis of the above steps.

6.2 Testing & Validation

Usability Testing: Conduct a usability test to determine if the app is easy to use and navigate. Ask users to complete tasks within the app while providing feedback on their experience. Observe how long it takes for users to complete tasks and if they encounter any difficulties. Record their feedback and make changes to the app accordingly.

Performance Testing: Conduct a performance test to determine if the app is responsive and fast. Test the app on various devices and operating systems to ensure that it performs well across different platforms. Use performance monitoring tools to identify and fix any bottlenecks or issues.

User Testing: Conduct user testing to determine if the app is effective in improving the user's motor skills. Use metrics such as accuracy and speed to measure the user's progress. Track the user's performance over time to determine if the app is effective in improving their skills.

Compatibility Testing: Conduct compatibility testing to ensure that the app works on different devices and operating systems. Test the app on various devices and operating systems to ensure that it works seamlessly across different platforms.

Special requirements for sustained usage:

Since a mouse skill app is a software application, there are no special requirements for sustained usage other than ensuring that the app is regularly updated to fix any bugs or issues and to add new features to keep users engaged.

7 Conclusions and Recommendations for Future Work

As a team we learn a lot of things related to our application Mouse-ify, which are important when reflecting on our development process and our outcome. We had several things that worked well, such as our development process and the collaboration within our team. However, we also faced many challenges and setbacks, such as time constraints and technical difficulties. Moving forward, some productive avenues for future work would be to explore additional features and functionality to enhance the user experience, add new levels and features, incorporate user feedback into future updates and releases, plan for scalability and future growth, continuously test and optimize the app to improve performance and functionality, and explore emerging technologies and trends to stay ahead of the competition and remain relevant in a rapidly evolving market. If we had a few more months to work on this project, we would prioritize improving the overall design and user interface of the application, as well as adding more levels and challenges to keep users engaged. We would also like to add more interactive elements, to enhance the experience for our users. Additionally, we would focus on optimizing the app for different devices and platforms to reach a wider audience. Some productive avenue for future work, will depend on the goal the other group(s) have that will continue and improve the work.

Additionally, we would include a section about settings and customization. The settings would ideally allow the user to customize their experience by adjusting settings such as the color contrast, font size, the sound effects ect. The user input can be in the form of toggling switches, adjusting sliders, or selecting from drop-down menus.

Future works include:

- Explore additional features and functionality to enhance the user experience.
- Add new levels and features.
- Incorporate user feedback into future updates and releases.
- Plan for scalability and future growth, including potential partnerships and collaborations.
- Continuously test and optimize the app to improve performance and functionality.
- Explore emerging technologies and trends to stay ahead of the competition and remain relevant in a rapidly evolving market.

8 Bibliography

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[3] “Game Making Software - Construct 3 ★★★★★,” *Construct.net*, 2011. <https://www.construct.net/en>

[4] “Connect to a Wi-Fi network in Windows,” *support.microsoft.com*. <https://support.microsoft.com/en-us/windows/connect-to-a-wi-fi-network-in-windows-1f881677-b569-0cd5-010d-e3cd3579d263>

APPENDICES

9 APPENDIX I: Design Files

Table 3. Referenced Documents

Document Name	Document Location and/or URL	Issuance Date
Mouse-ify	https://hi3u.itch.io/mouse-ify	2023/04/10
Asset_UI_Package	Dropbox https://www.dropbox.com/sh/lx12lbhri90inuc/AACbxI1cfYtJsT8gsEsKSdkxa?dl=0	2023/04/10
Pitch Video	https://drive.google.com/file/d/1LIU82QuTfK72b7XE4oHFF0109WlOLIDG/view?usp=share_link https://youtu.be/A9M7tKn5epk	2023/04/10
MakerRepo link	https://makerepo.com/BoubrikNada/1664	2023/04/11

10 APPENDIX II: Other Appendices

Client Interview Questionnaire

https://docs.google.com/document/d/e/2PACX-1vTpdRCRqgZdXnnzltv1RJpIGhXnw_WAAOV_ZDGPdZIHJpMhoPWNmfpBbCshN5ltLnXzlKCH94uVaC45/pub

Customer Needs & Prioritization

Table 4. Customer Need

Needs	Priorities (1-5)
1. Teach fundamental mouse skills (left click, right click, double clicking, scroll, dragging, text selection and combination of movements)	5
2. Not childish : Age appropriate	5
3. Can retain user's attention span for a long duration	3
4. Has a visual demonstration of instructions	4
5. Designed for people who have little to no mouse skills	5
6. Different levels of difficulties	3
7. Accommodate with Audio	2

8. A software to install	1
9. Accommodate visually the users writing size (font)	4
10. Simple content and easy to understand	5
11. Accommodate visually the users in term of color, and contrast	4
12. Help users gain more independence with their mouse skills	4
13. Accommodate for different attention spans	3~4

Benchmarking & Metrics

Table 5. Benchmarking

Source	Observations/technical criteria	Need requirement
http://mousepractice.altervista.org/	<ul style="list-style-type: none"> - Kids games/chish - Requires a pre-understanding of how the mouse works - Slow reaction time - Point system 	1. X 2. X 3. O 4. X 5. X 6. X 7. O 8. X 9. O 10. O 11. O 12. O 13. O
http://www.mouseprogram.com/practice.html	<ul style="list-style-type: none"> - Kids games/chish - Requires a pre-understanding of how the mouse works - never ending - Module for different mouse function: <ul style="list-style-type: none"> - Text selection - Right click - left click - double click - Dragging dropping - Double clicking - Scrolling - Moving mouse 	1. O 2. O 3. X 4. X 5. O 6. X 7. X 8. X 9. O 10. O 11. X 12. O 13. X
http://www.pbclibrary.org/mousing/m6.htm	<ul style="list-style-type: none"> - Not childish - requires a pre-understanding of how the mouse works - Seemed to be never ending - Increase level of difficulty - Just left clicking and moving the mouse around - Repetitive - Small font and no color contrast 	1. X 2. O 3. O 4. X 5. O 6. O 7. X 8. X 9. X 10. O 11. X

		12. O 13. X
https://poki.com/en/g/dinosaur-game	<ul style="list-style-type: none"> - Google dino game - Only right clicking - Increase in difficulty - Easy to understand and play - Not childish 	1. X 2. O 3. O 4. X 5. O 6. O 7. X 8. O 9. O 10. O 11. X 12. O
IT Mouse skills	<ul style="list-style-type: none"> - \$59 - Childish - Increase level of difficulty - Just left clicking and moving the mouse around 	1. O 2. O 3. X 4. X 5. O 6. X 7. X 8. O 9. X 10. X 11. X 12. O 13. X
Dragon drop	<ul style="list-style-type: none"> - Only left click and drag motion - Font quirky and hard to read - Obstacles => complicated - Stages (gets more difficult) and lives to play - A game - Childish 	1. O 2. O 3. X 4. O 5. X 6. X 7. X 8. O 9. X 10. X 11. X 12. O 13. X
https://mouse-practice.com/games/	<ul style="list-style-type: none"> - Kind of childish - Mostly left clicking and mouse moving - Some of the games can cause dizziness 	1. X 2. X 3. O 4. X 5. O

	<ul style="list-style-type: none"> - No level up - Games 	6. X 7. O 8. X 9. O 10. O 11. X 12. O 13. O
https://www.start.tinytap.com/animoca-brands/?source=3	<ul style="list-style-type: none"> - Some games are childish and some others are more for teenagers - Left clicking, dragging and typing - Tutorial on how to use the mouse included - Multiple games with different types of complexity 	1. O 2. X 3. O 4. O 5. O 6. X 7. O 8. X 9. X 10. O 11. X 12. O 13. O
https://www.abcmouse.com/abc/?8a08850bc2=S2926733131.1674428851.3528	<ul style="list-style-type: none"> - Kid's game - 850 lessons across 10 levels - Cognitive skills - Childish 	1. O 2. X 3. O 4. O 5. O 6. O 7. O 8. X 9. X 10. X 11. O 12. O 13. X

Target Specifications

Table 6. Target Specification

Needs	Metric / criteria	Specification	unit	Justifications
Teach fundamental mouse skills (left click, right click, scroll, dragging, text selections and combination of movements)	Multiple functions	Yes	Binary (Yes/No)	This is the goal of the project
Not childish : Age appropriate	Age appropriate	Yes	Binary (Yes/No)	The client clarifies that the users extremely dislike childish content
	Age range	20-70	Years	
Can retain user's attention span for a long duration	retention rate		time	Part of learning a new thing is to practice it over again. Therefore, it is necessary to retain user's attention span for a long duration
Has a visual demonstration of instructions	Visual Demonstration	Yes	Binary (Yes/No)	Some users have developmental issues beside their disabilities. Client said that a visual demonstration would support the users' comprehensively
	Caption for videos	Yes	Binary (Yes/No)	
Designed for people who have little to no mouse skills	For beginners	Yes	Binary (Yes/No)	The majority of users do not have mouse skills. Therefore, this app is expectedly designed to teach people with little to no mouse skills
Different levels of difficulties	Levels	>= 6	Levels	To help the user increasingly practice mouse

				skills
Accommodate with Audio	Audio	Yes/No	Binary (Yes/No)	Not an important need, but the client said that if there is also audio to support the application whether in terms of instruction or the mood, it would be nice
A software to install	software	No	Binary (Yes/No)	again, the client claimed that it would be a nice idea to have the application as a software to install.
Accommodate visually the users writing size (font)	font size	30	pts	Users have vision problems. Therefore, text font size is an important need to support their experience.
	Sentence length	< 75	characters	
Simple content and easy to understand	Customer survey	1-5	scale	In the project description, the client stated that some of the existing applications are too complicated. The purpose of this software is just to teach simple and basic mouse skills.
	Task Success Rate (number of attempts / total number of attempts) (shows the percentage of participants that successfully complete)	1-10	percent	
Accommodate visually the users in term of color, and contrast	colors contrast (WebAIM's color contrast checker)	4:5:1 normal text	ratio	As mentioned, users have visual problems. Therefore, making the app high contrast may improve the experience.
	brightness		levels	
Help users gain more	mouse sensitivity	800 +/- (500)	DPI	The mouse on a

independence with their mouse skills				computer can be modified differently (sensitivity is a big factor). The goal is to also make the user feel comfortable using the mouse regardless of the mouse's settings
Accommodate for different attention spans	Maximum duration	15 - 30 mins	Minutes (mins)	Users have different attention spans when using an app or doing a tutorial. Therefore, the team should also consider the attention span factor.