

Introduction to AR and VR (AT62001)
Individual Assignment

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Spring Semester, 2022-23

User Experience for each version of the app

Version 1

- The UX on using the app was moderate with slightly on the lower side as the interface was not quite intuitive
- There was a lack of instructions and it was very unclear how the game would proceed and what needs to be done.
- The camera needed to be quite far away from the table on which the markers are present to encapsulate the long queue of markers which represent the code and to get the full view of the bunny and the position of carrots.
- The documentation/manual is quite weak and does not give complete information about the loop cards, it takes some time to figure out that the for loop only repeats the last one instruction.
- The text about loop and card roles should be kept in some form of information panel in the game play scene.
- The markers for while and for loop are almost the same with slight difference of one arrowhead which makes it difficult to recognize which marker needs to be used in that level.

Version 2

- The UX was far better than Version 1 of the app with some modified graphics of the home screen.
- Bigger font size with bolder text and clear set of instructions made the playing very smooth.
- The addition of the login screen made it more robust with respect to storing game state of a particular user.
- Addition of the instructions window was a major boost to the UX.
- Some levels are quite hard for beginners and would need some hints but in spite of mentioning about hints in the instructions none of them are provided which might lead to degradation of interest.

Version 3

- The UX was very similar to the Version 2 of the app but the addition of a leaderboard made the game slightly more competitive as it records the time taken to complete each level.
- Adding a click to run popup if the user forgets to press the play button after some time was a nice addition.
- Sometimes even on correct placement of cards, the bunny goes in the wrong direction which leads to confusion.

Version 4

- Addition of a song made the UX a whole lot aesthetic and gave a good feel while playing the game.
- Some other additions like Welcome Back text, centre alignment, leaderboard after the user logs in and smoothing of corners added to the overall beauty of the game.
- Sometimes, the game hangs and the mobile needs to be given a jerk for the play button to be enabled even when the right sequence of cards is placed

Version 5

- Addition of blinking animations to the instructions window made it more feasible. However, the UX was almost the same as Version 4 but there were some downgrades such as the text becoming too small and font inconsistency.
- In addition to it, again placing the leaderboard on the home screen was a bad move in my opinion as you want to see yourself in the leaderboard and should be present after you are logged in.
- One major drawback is that the game stores the level information only if the logout button is pressed. If the app is closed without pressing the logout button all information is lost and the user has to restart the game.

Differences

Features	Version 1	Version 2	Version 3	Version 4	Version 5
Login Screen	There is no login screen.	Login screen with name and roll number added.	Login screen with name and roll number is present.	Login screen UI changed. Everything is centre aligned with a new heading.	Login screen is the same as Version 3.
Leaderboard	There is no leaderboard.	There is no leaderboard	Leaderboard is present but it is static (does not get updated) and is present in the home screen	Leaderboard now gets updated with level-wise information and also appears after login.	Leaderboard gets updated with level-wise and global information but is again in the home

			(where login is present).		screen.
Instructions at the beginning	There are no instructions or tutorials at the beginning of the game.	Elaborative instructions after login are present.	Elaborative instructions after login are present.	Elaborative instructions after login are present.	Elaborative instructions after login are present.
Game Song	There is no song in the whole game.	There is no song in the whole game.	There is no song in the whole game.	Song is added to all screens other than the play screen.	Song is added to all screens other than the play screen.
Design of home screen and after login screen	Poor graphics. Simply contains the play button.	Good graphics. Contains login button. No Welcome Back text.	Login button and leaderboard button is present. No Welcome Back text.	Instead of textual buttons now most of them are with images. Welcome back text after login is present.	Instead of a welcome back text now a text with "Hello user, let's guide you" appears.
Unlocked levels	Only level 1 is unlocked and other levels keep on unlocking as we complete the previous level.	Only level 1 is unlocked and other levels keep on unlocking as we complete the previous level.	Only level 1 is unlocked and other levels keep on unlocking as we complete the previous level.	At the beginning levels 1, 4 and 7 are unlocked and if we unlock new levels then on returning to home screen the newly unlocked levels again become locked.	Only level 1 is unlocked and other levels keep on unlocking as we complete the previous level.
Style changes	Small text size. Unclear and simple text font. Difficult to read.	Bold text and bigger font size.	Bigger and bolder text.	Font changed, button colour changed from blue to red and more towards the top right. Text	Back button renamed as previous. Small and changed font. Changed colour and added emojis

				colour changed. Changes in play button.	to text.
Message on different game events	Messages were not motivating and slightly irrelevant.	Incorrect placement of cards message changed.	“Use right set of cards” and changing of “Oh No” message	“Welcome Back” with bold and big font added.	Messages with different colours and emojis are present
Animations in instructions window	There are no animations.	There are no animations.	There are no animations.	There are no animations.	Blinking animation added to text in instructions
Orientation of application	The app begins with left orientation on opening.	The app begins with right orientation on opening.	The app begins with right orientation on opening.	The app begins with right orientation on opening.	The app begins with right orientation on opening.
APK Size	51.4 MB	65.73 MB	68.47 MB	69.76 MB	73.8 MB

Suggestions for improvement

- It is difficult to hold the phone with one hand and then click on the play button with the other hand while maintaining appropriate distance and stability for all the markers to be visible on the screen. To improve upon this, we can incorporate **voice commands** for the play button so it is easier to play the game.
- The game should allow users to **complete levels on any correct placement of markers** and there could be **points system** where a user will be given points based on their solution and how close it is to the optimal one.
- There is a lack of proper information about loops and what function they perform. We can provide **more levels with looping instructions** as they make the core of any programming paradigm.
- There is no song when we are playing the game and no noise of bunny jumping and collecting carrots. So, **different noises can be added to the game when the bunny jumps or collects carrots or when a level is completed** to make the UX more enriching.
- There is no any availability of **nesting loops** so a functionality for adding loops within loops to shorten the code can be added.

- There is no authentication in login. We can have a centralised database of users and a **proper authentication mechanism** after login (like OTP) which will also help users to see the **leaderboard of global users** and not just the users on that particular device.