

Memorise IT

OS Lab Project Report

1901,1903,1921

Description:

A Game where the user has to memorise a matrix of randomly generated numbers and where they are placed in the matrix

The user is then asked where a particular number is placed and the user has to answer with the row and column numbers. If they are correct, they are awarded a point but if they are wrong a point is deducted.

The round has a timer of 2 minutes where the user is allowed to attempt gaining the most points.

The round only ends once the timer runs out or once the user guesses all 9 positions of the numbers, whichever occurs first.

OS Concepts and where they were used

A Child process is used to show the user a welcome screen before main menu is showed

Signals to implement the timer in the round.

Files were used to store the scores, game info, and ANSI text art as the banner

Problems faced and their solutions

1. Since C is not real time, we could not stop the game as soon as time was over, so instead we had to accept input after time over but not give points
2. Since we could not use system("pause") before clearing screen as it is a windows only function, we had to write our own function which waits for user to press the enter key to continue and then clear screen

Potential Improvements for the future

1. Let user choose how big they want their matrix to be and accordingly calculate and give them that much of a time limit
2. Make the game user profile based so that they can check their own high scores and friends high scores
3. Implement game in a language that will allow for real time changes on screen to impose proper time limit on player as well as display timer while they play
4. Calculate score with both right answers as well as time they have left if they finish it before time is over

Screenshots

Welcome Screen



Main Game menu



1. Play game
 - a. Input user name



- b. Number matrix displayed for memorisation



- c. User asked to enter answer

```
aishwarya@localhost:~/OSLAB/project/final — ./run
MEMORISE IT

Current Score: 0
  c0    c1    c2
r0     *     +     *
r1     *     +     *
r2     *     +     *
aishu, where is number 6
Row: 2
Col: 1
```

- d. If guess is correct
i. Score change and message

```
aishwarya@localhost:~/OSLAB/p
MEMORISE IT

Current Score: 0
  c0    c1    c2
r0     *     +     *
r1     *     +     *
r2     *     +     *
aishu, where is number 8
Row: 2
Col: 1
Correct!+1 added to score
Current score: 1
█
```

- ii. Change in Number matrix

```
aishwarya@localhost:~/OSLAB/p
MEMORISE IT

Memorise Where each number is
  c0    c1    c2
r0     #     0     5
r1     0     7     4
r2     8     3     7
```

iii. Change in star matrix

```
aishwarya@localhost:~$  
MEMORISE IT  
Current Score: 1  
  c0    c1    c2  
r0    *    +    *  
r1    *    +    *  
r2    *    8    *  
aishu, where is number 7  
Row: 0
```

e. If guess is wrong

i. Score change and message

```
aishwarya@localhost:~/C$  
MEMORISE IT  
Current Score: 1  
  c0    c1    c2  
r0    *    +    *  
r1    *    +    *  
r2    *    8    *  
aishu, where is number 7  
Row: 0  
Col: 0  
Wrong! -1 added to score  
Current score: 0
```

f. If time over

```
aishwarya@localhost:~/OSLAB/project$  
MEMORISE IT  
Current Score: 0  
  c0    c1    c2  
r0    *    +    4  
r1    *    +    *  
r2    *    +    *  
aishu, where is number 0  
Row: 0  
Col: 0  
Time up  
Last Input not counted
```

g. End of game screen

```
aishwarya@localhost:~/OSLAB/project/final — ./run
MEMORISE IT
GAME OVER
Your score is:0
Press [Enter] to continue: █
```

2. Scores

```
aishwarya@l
MEMORISE IT
-----
Username      Score
-----
2356          0
kiki          1
kuro          0
kuro          0
trial         2
numbaha       -1
Kuro          0
kuro          7
kiki          7
now           0
timeover      0
time          1
Press [Enter] to continue: █
```

3. Information

```
MEMORISE IT

-----
Information:-
-----
Instructions:
1. Game consists of 1 Round with a duration of 2 minutes
2. The Round will Start after you enter your Username
3. Score will be stored for later display
-----
Game Mechanics:
1. You will be shown a square matrix of size 4 with
   randomly generated numbers,
2. You will be given 3 seconds to memorise the matrix
   after which it shall be replaced by stars
3. You will then be asked where a certain number is
4. Rows and Columns of the matrix are shown to help
   you guess the position of asked numbers.
5. Some numbers in the matrix might be repeated in which
   case you may choose either when asked
6. If the position is correctly guessed you will be
   awarded +1 and the number will be replaced by a
   # to indicate that that number has been guessed
   already.
7. If the position is not correctly guessed -1 will be
   awarded
-----
About:
This game was created by students of FYMCA
Roll Numbers:
1901
1903
1921
as part of their OS project for SEM-II, 2020
-----
Press [Enter] to continue: █
```

4. Upon exit

```
MEMORISE IT

You have chosen to exit
```