Planning and Designing

SOFTWARE DESIGN AND DEVELOPMENT: MAJOR WORK

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YEAR 12

Research into Program Creation

Various Standard algorithms are being used in the development of this project:

- ***Generating a set of unique and random numbers:***
  A random set of numbers is used in the rolling of the dice which helps in the movement of the player.
- ***Finding the minimum in an array***
  The minimum is found to determine which player has the least amount of money by the end of the game.
- ***Selection sort***
  A selection sort is used to arrange the properties purchased by the use in the order they are available on the board so that if all the same colored properties are purchased the rent of those properties are doubled.

Appearance and functionality of the program compared to similar product

*One of the similar products available in the market to my developed game **Rags to Riches** is the game Monopoly and the game of life created by Hasbro. The game boards of the programs look like the following:*

Rags to Riches

Monopoly

Life

Appearance wise Monopoly has a generic structure with basic features on the game board and paler colors whereas Life has a very colorful interface which may appeal to the user. However, ***Rags to Riches*** *has a wide variety of vibrant colors and pop culture references which would appeal more to its target audience of teenagers and young adults.*

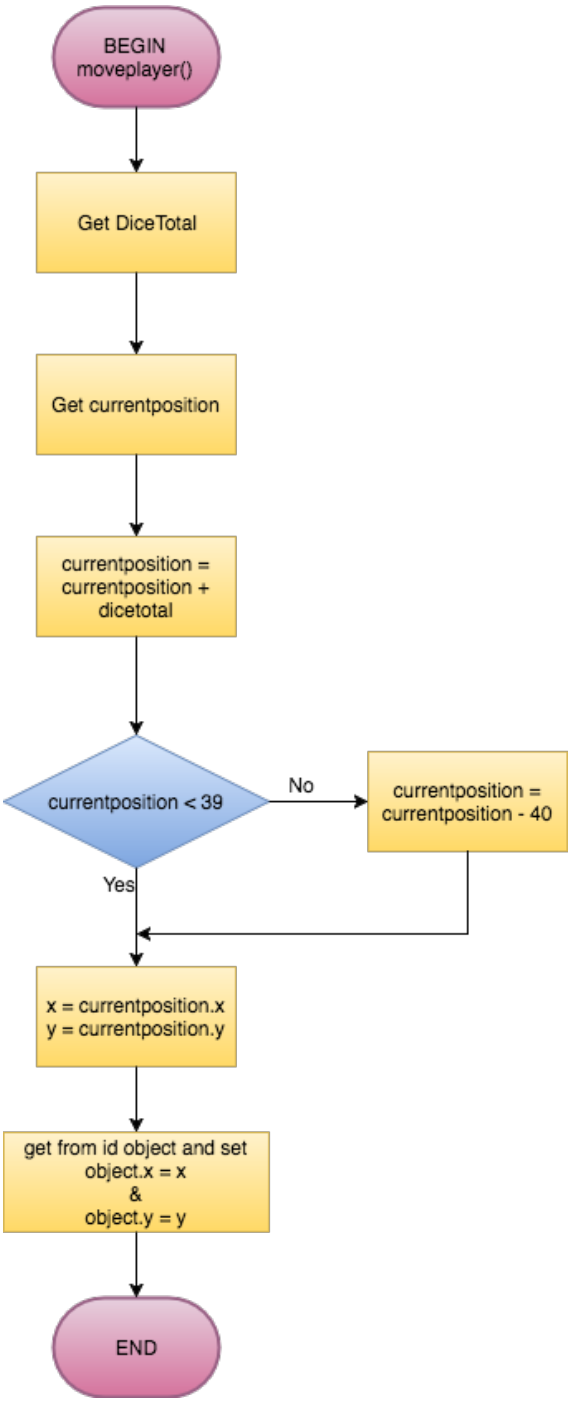
All games consist of the basic functionality of moving around the board and purchasing different things, ***Rags to Riches*** *has various other functions such as the finding the correct box etc. which would appeal to the users more. My program,* ***Rags to Riches*** *would also contain a mini game unlike what are available in the other board games which would allow my product to stand out more. Unlike Monopoly and Life which are available as physical game boards,* ***Rags to Riches*** *is available on an online platform so that the users can access the game anywhere provided they have a computer with a web browser and a web connection*

Platform considerations.

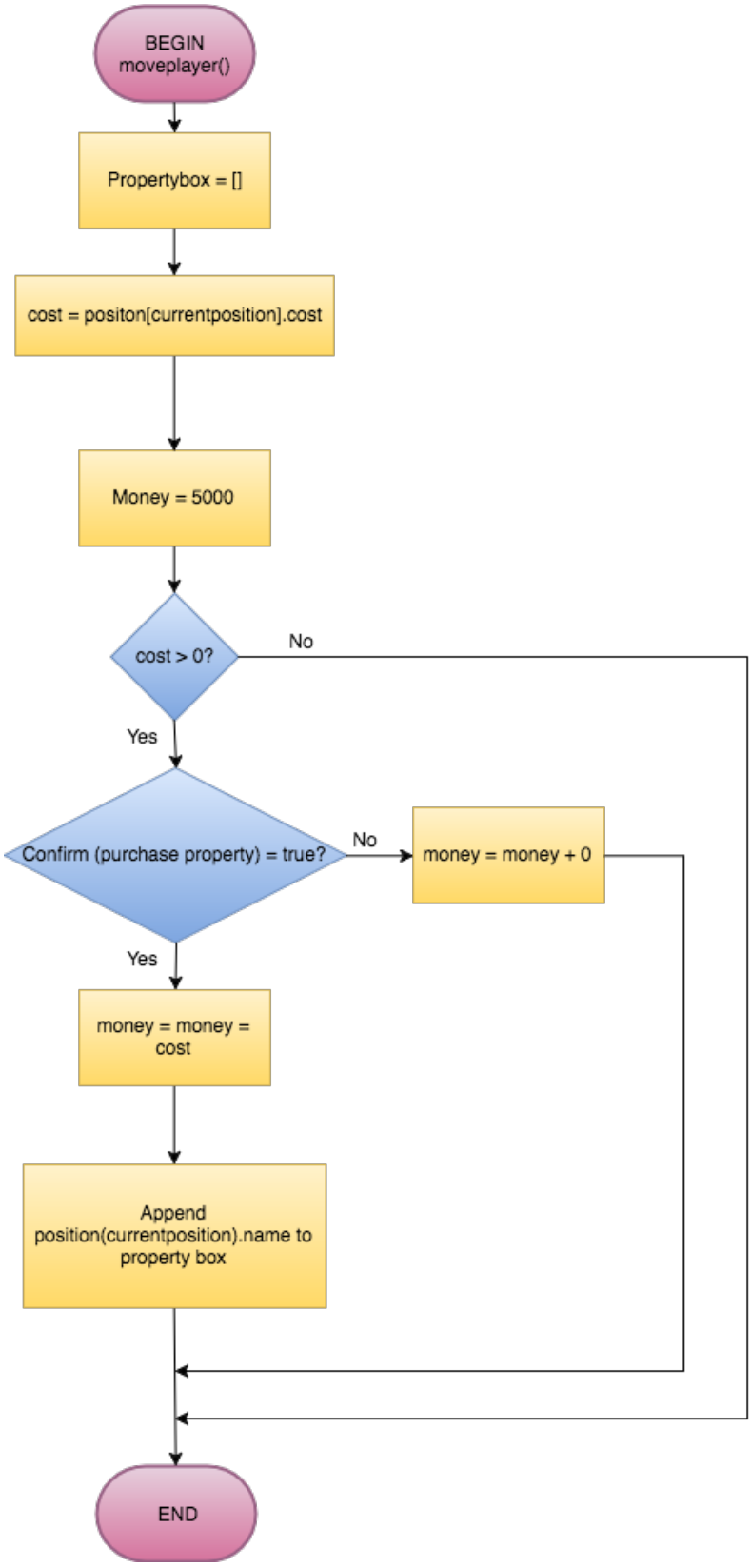
The program that I am developing will be available via a web browser. There are various devices available for the testing of the program which includes both Mac and Windows operating systems, and various web browsers such as Google Chrome, Safari, Mozilla Firefox and Internet explorer which help me in testing the usability of my product. The language being used to build this program is JavaScript which works on most browsers. The program that I am trying to build is a small scaled project thus it would not require a server for it to be available to the target audience. Products similar to my game (such as Monopoly) are available on both Mobile devices and computers as applications, however my game would not require any installation and thus would take minimum amount of space as compared the other products. Thus, any user with access to a computer with a web browser would be easily able to play my game.

Algorithm Flowcharts

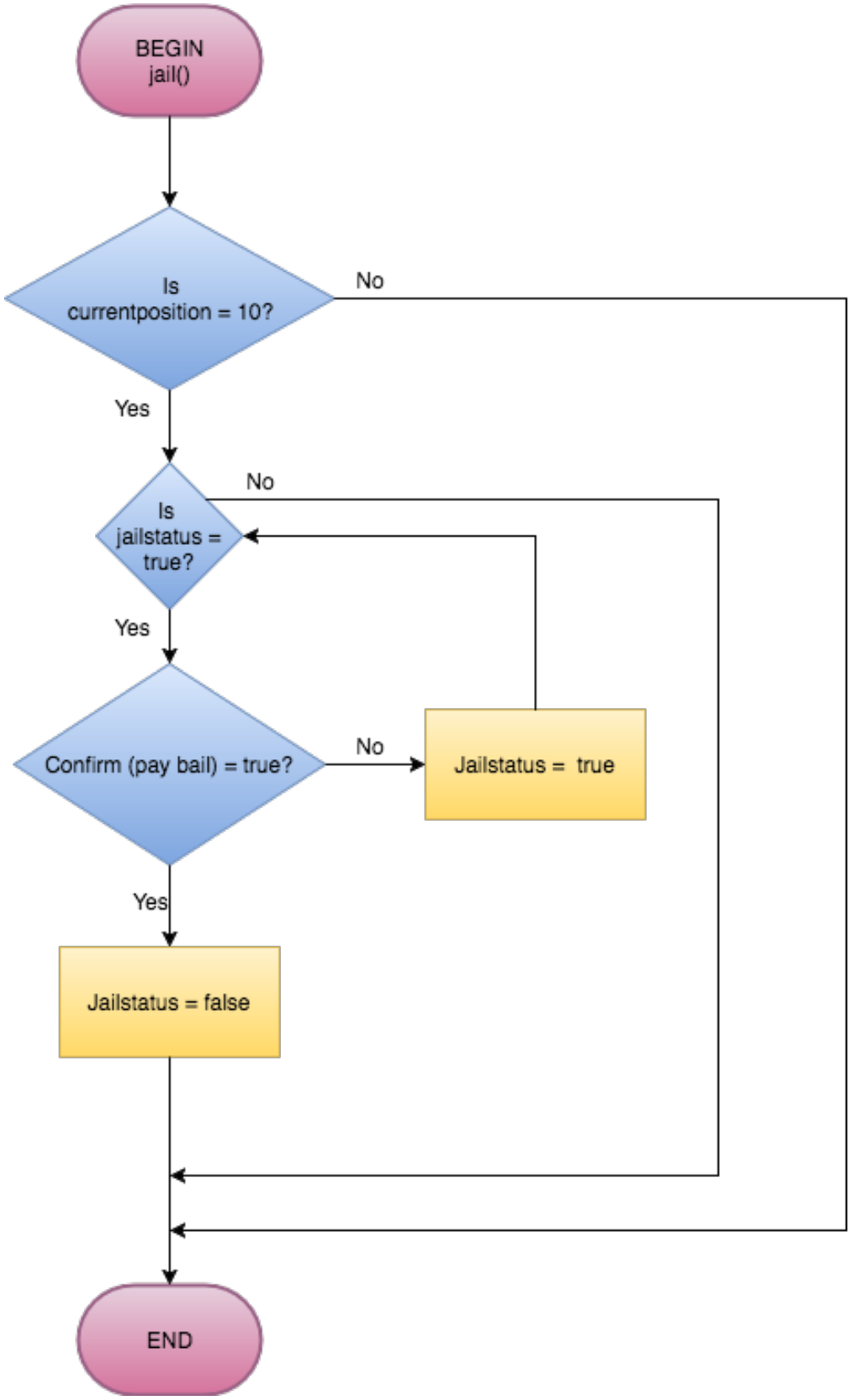
Moving the player function



Buying the property function



Going to jail function



Pseudocode

Rolling the dice

```
BEGIN Function rolldice()
        Dice1 = generate random integer (1,6)
        Dice2 = generate random integer (1,6)
        Dicetotal = Dice1 + Dice2
END
```

Moving the player

```
BEGIN Function moveplayer()
        Rolldice()
        currentposition = 0
        currentposition = currentposition + dicetotal
        IF currentposition > 39 then
                currentposition = currentposition – 40
        END IF
        posX = position(currentposition).x
        posY = position(currentposition).y
        set y coordinate from object “id” to posY
        set x coordinate from object “id” to posX
END
```

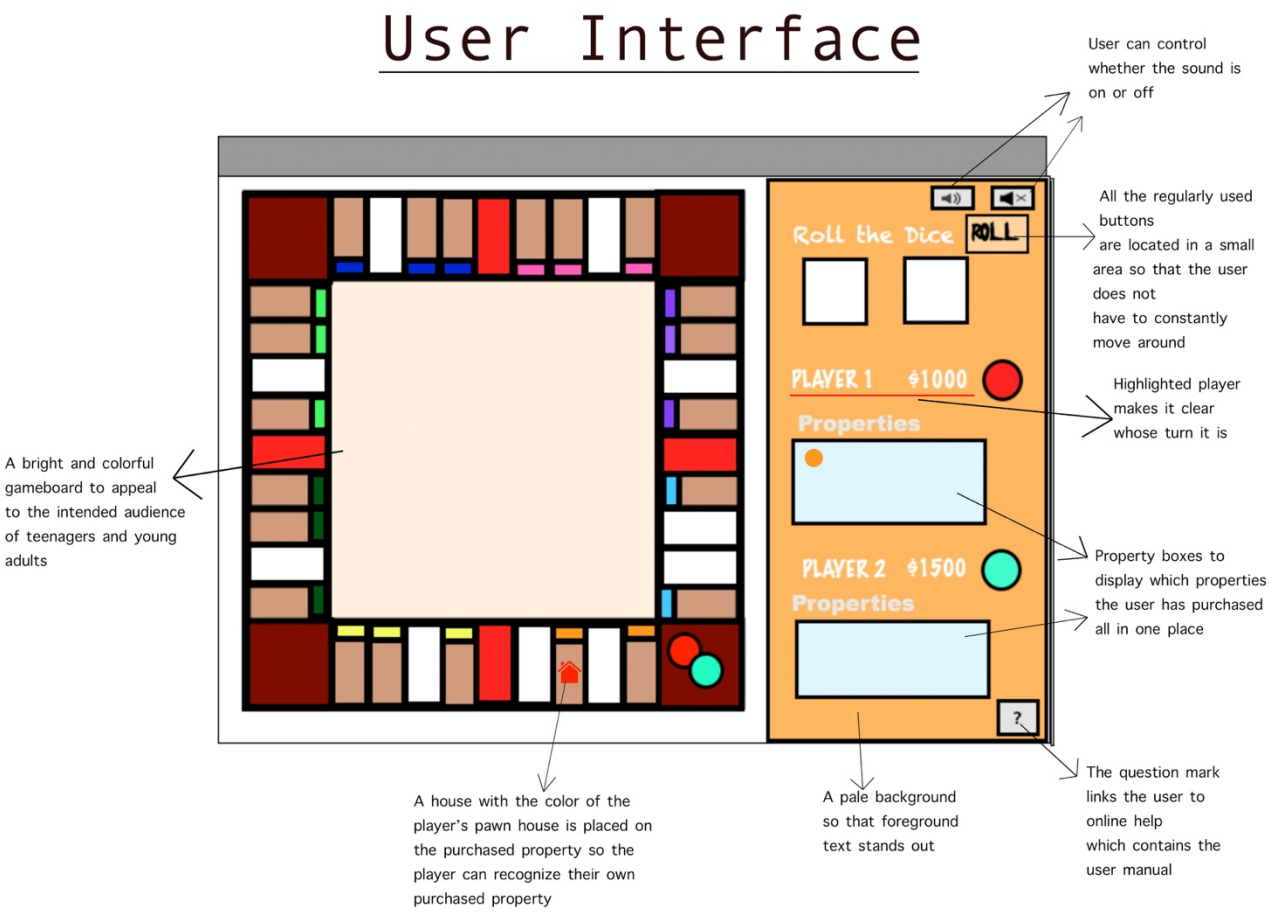
Buying the property

```
BEGIN Function buyproperty()
        Propertybox = []
        Cost = position (currentposition).cost
        money = 5000
        IF cost > 0 THEN
                Display conformation dialogue box: "Confirm Purchase property y/n"
                IF confirm (purchase property) = true THEN
                        money = money – cost
                        Append position (currentposition).name to property box
                ELSE IF confirm (purchase property) = false
                        money = money + 0
                END IF
        END IF
END
```

Jail

```
BEGIN jail()
        IF currentposition = 10 THEN
                 WHILE Jailstatus = true
                        Display conformation dialogue box: "Confirm pay bail y/n"
                        IF confirm (pay bail) = True THEN
                                Money = money – 300
                                Jailstatus = false
                        ELSE IF confirm (pay bail) = False THEN
                                Jailstatus = true
                        END IF
                END WHILE
        END IF
END
```

User Interface Design



Social and ethical issue:

My game has the game board on the left side and a panel on the right side of the user interface which contains all the buttons such as the roll dice buttons, the help button and the sound buttons. This panel is available in a fixed position thus the buttons used by the player such as the roll button stay on a constant position addressing the ergonomics issue which would reduce the required movement of the cursor for the user. Also the property boxes would be available at a stationary position in this panel which hence improves the consistency of the user interface. Thus, this is able to address one of the main ergonomic issues which can occur while developing a user interface.