CMP 104 – Programming with C++

Final Assignment Report

For my assignment, I first approached the task by laying out all the features that I wanted to implement from most to least important. I decided that it would function much like a game, and have a main menu, which contained the options to play, enter a settings menu, or exit the program. There would also be features such as input validation and checking if the player is sure before they want to proceed.

Gameplay consists of pressing ‘E’ to play upon loading up the program, which takes the user into a loop where a series of characters are rendered to the screen in rows and columns, each row overprinting rapidly to give the impression that they are reels of images that are spinning backwards. A set cash amount is deducted from the player’s overall cash pool, which is equivalent to the number of columns currently being rendered multiplied by ten. By default, the number of columns is three. The characters overprint a certain number of times until the leftmost column automatically stops, the timer resets, and the columns further along continue overprinting until all columns have been stopped. Alternatively, the player can press ‘S’ while the reels are spinning to skip to the next column.

Each character also has a randomised colour, and the user has the option to win a bonus prize if they can match the colours as well as characters. This functions by generating two two-dimensional arrays of maximum size seven rows and nine columns, one for the characters and one for the integer values of the colours. The character array is populated by pulling elements from a predefined list of characters, and then each column is shuffled to give the gameplay an element of randomness. The colours are selected randomly from values between one and fourteen. The centre row is also given a white background, to indicate that is the row the user should aim to stop in. Once each character is printed once, each element in each array is swapped with the one behind it and it is re-rendered, to give the impression the colours and characters are moving as one object up the screen.

Once all reels have been stopped, the program compares all the symbols in the middle row. The player wins by obtaining all in a row of one type of character and are then awarded a cash prize equivalent to double the cash they originally bet. If the player obtains two or more, but not all of one type of character, their prize is one and a half times the original cash bet. If they obtain all of one colour type in a row, they win a bonus cash prize equivalent to half the original cash bet, and a quarter of the original cash if they have two or more colours in a row.

There are also unique character effects for certain symbols. Dollar signs give triple cash, ampersands give double cash and a free bonus spin next time the user enters the game, and exclamation marks award nothing at all. This only comes into effect when the user has all in a row of any of these characters, however, and if they only have two or more, then they are treated like any other character.

The user also has the chance to enter an options menu outside of betting cash by pressing ‘O’ while in the main menu screen. There, they are given three settings to alter – change the number of columns, toggle the colour bonus feature on or off, and toggle the unique character effects feature on or off. This is done by entering in a numerical value with a lower and upper limit, which is passed to a function to validate user input. The user can select to play for columns between three and nine, and the other two options are binary.

The player can also quit the game while in the main menu by pressing ‘Q’ and are presented with chance to change their mind and continue gameplay, or instead proceed and exit the program.