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# Design of the Solution

## Explanation of Problem

When the user opens the game, they will be presented with a menu. This menu will give them five different options:

* Encrypt Message
* Extended Encryption
* Decrypt Message
* Extended Decryption
* Exit the Program

They will be able to choose from these options by corresponding letters which will be printed next to each bullet point. Encrypt Message will have an “e”, decrypt message will have a “d”, extended encryption will be “ee”, extended decryption will be “ed” and exit the program will have “x”. They will be told to type in one of the letters and press enter.

If the user enters “e” into the program, it will be taken down the encryption path. Firstly, they will be shown a message which asks them to enter the name of the file which needs to be encrypted. The contents of this file will be loaded and presented onto the screen. Then, the user will be shown eight random characters that have been converted from numbers using ASCII code. These eight characters are converted into their corresponding ASCII code, and are used to find the offset factor, which is shown to the user. Finally, the user is asked to enter the name of a new text file, to which the encrypted code is saved.

If the user enters “d” into the program, then the program will take them down the decryption path. To begin with, the user will have to input the file containing the message to be decrypted, which is then loaded. As soon as they have entered the file name, they will be asked to insert the eight character key that was used to encrypt the message. The program will the decrypt the encrypted message and display it to the user.

If the user has entered “ee”, then the user will go through the same path as encryption, however, when they are presented the message at the final step, it is shown in blocks of 5 characters, no matter what the message says.

Finally, if “ed” is entered by the user, they are will go through a similar path to decryption, but will have the final message printed to them in blocks of five characters.

# Solution Development

# Programming Techniques Used

# Testing and Evaluation