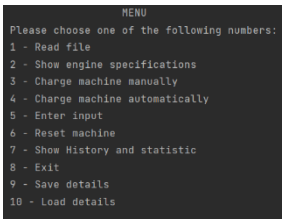
README



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***The bonus is included in the project.**

How to use: run the "LAUNCH ME.bat" file.

First you will have to load a file to the Enigma, you have 2 options:

1. Enter "1" and then you will have to enter a full path of a xml file that contains the engine details (e.g. C:\Users\talre\source\repos\ex1-sanity-small.xml).

   ```
   Please enter a xml file name including the path (e.g. C:\Users\talre\source\repos\ex1-sanity-small.xml)
   ```

   After loading a file you will have to set the configuration of the machine, for that you have 2 options:

   a. Enter "3" for manually set and then you will have few steps:
      i. Enter as many rotors as its written in your file by entering their ids separate by a comma (the first one will be the leftmost rotor).

      ```
      Please choose 2 of the following Rotors seperated by a comma - 1,3,2 (e.g. 55,63,13):
      ```

      ii. Enter starting positions from the ABC without separates (as one string), each position will be a note from the ABC (the first note will be the leftmost rotor's position).

      ```
      Please enter a string with the length of 2 of notes from the ABC that will set the starting positions for each Rotor (e.g. 4D8):
      ```

      iii. Choose the number that represents the reflector that you want.

      ```
      Please choose one of the following numbers:
      1) I
      2) II
      ```

      iv. Enter the plugs that you want as one string (from the ABC), any 2 adjacent notes will be a plug (the string ABCD will represent the plugs AB and CD).

      ```
      Please enter a string that representing the plugs (e.g. -ABCD- for the plugs AB and CD):
      ```

   b. Enter "4" for automatically set.

2. Enter "10" and then you will have to enter a full path of a file that contains the engine details and the machine details (e.g. C:\Users\talre\source\repos\ex1-sanity-small.dat).

   ```
   Please enter a xml file name including the path (e.g. C:\Users\talre\source\repos\ex1-sanity-small.dat)
   ```

Once the machine is charged you can **use the encryption** option, you will enter "5" and then you will enter a string from the ABC and will get it encrypted.

```
Please enter a string of legal notes from the ABC (ABCDEF):
```

If you would like **to see the machine configuration**, enter "2".

```
1.The total rotors in use are: 3/3
2.The total reflectors in The Engine are: 2
3.The amount of messages processed by the machine so far is: 1
4.The original code description: <2(4),1(1),3(5)><CCA><I><A|D,B|F>
5.The current code description: <2(4),1(1),3(2)><CCD><I><A|D,B|F>
```

To see all the messages that passed threw the machine and how long did it take them to be encrypted enter "7".

```
History details:
Code description <2(4),1(1),3(5)><CCA><I><A|D,B|F>:
    1.<AAA> --> <DDD> ( 92200 nano-seconds)
Code description <2(4),3(4),1(5)><CBE><I><A|F,C|D>:
    1.<AFAFAFAFA> --> <EADCFBEAD> ( 65300 nano-seconds)
    2.<DDDDDEEEE> --> <BCABCCABC> ( 35100 nano-seconds)
Code description <1(1),2(4),3(5)><CCA><II><A|E>:
    1.<BBBCCD> --> <EFEEAA> ( 65500 nano-seconds)
```

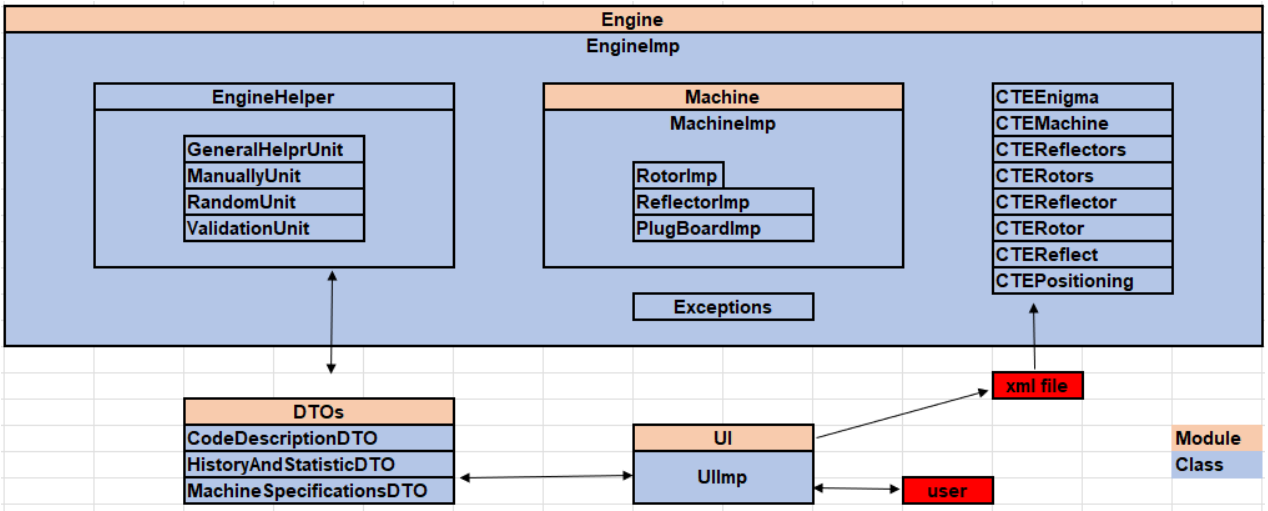
To reset the rotors to the last configuration that was entered enter "6".

To save all the details of the engine (including the history and machine configuration) enter "9" and then enter the name of the file where you want to save the details (including path).

```
Please enter a file name including the path (e.g. C:\Users\talre\source\repos\ex1-sanity-small.dat)
```

To exit, enter "8".

Code structure



UIImp - constitutes the interface between the user and the machine engine.	**EngineImp** - constitutes a unit for receiving commands, executing them and returning output accordingly.

MachineImp - constitutes the Enigma Machine as it is.	**EngineHelper** - holds the four auxiliary units for the engine.
RotorImp - constitutes the realization of the rotor.	**GeneralHelperUnit** - implements within it a set of general methods.
ReflectorImp - constitutes the realization of the reflector.	**ManuallyUnit** - implements within it a set of methods to manually initialize the machine.
PlugBoardImp - constitutes the realization of the plug board.	**RandomUnit** - implements within it a set of methods to initialize the machine automatically.
	ValidationUnit - implements within it a set of input testing methods.