

*This program simulates a simple 3 rotor Engima machine
You can choose to use the default rotor setting,
or you can define your own rotor setting
The valid rotor setting starts with a #,
followed by all chars from english alphbet (occurring once)
The valid string to be decrypted has no space between chars,
When decrypting, use # to represent space to avoid errors*

Please select from the menu below:

- 1. Use default rotor settings*
- 2. Input custom rotor settings*

Selection:

1

Using default rotor settings

The Enigma model will use the following settings:

Outer: #BDFHJLNPRTVXZACEGIKMOQSUWY

Middle: #EJOTYCHMRWAFKPUZDINSXBGLQV

Inner: #GNUAHOVBIWPCJQXDKRYELSZFMT

Would you like to:

- 1. Encrypt*
- 2. Decrypt*
- 3. Run Default Example*

3

Would you like to:

1. Encrypt
2. Decrypt
3. Run Default Example

3

You have chosen to use the default string: Computer Programming is Lots of Fun

After encrypting but before resetting the rotors are:

Outer: #BDFHJLNPRTVXZACEGIKMOQSUY

Middle: V#EJOTYCHMRWAFKPUZDINSXBGLQ

Inner: YELSZFMT#GNUAHOBIPWCJQXDKR

Your encrypted string is: OK#EKNJTAZQSENIEVJPPPXS MINTYSCBPITT

Initially, the rotors are:

Outer: #BDFHJLNPRTVXZACEGIKMOQSUY

Middle: #EJOTYCHMRWAFKPUZDINSXBGLQV

Inner: #GNUAHOBIPWCJQXDKRYELSZFMT

If we now decode this string, we get: COMPUTER PROGRAMMING IS LOTS OF FUN

The Enigma model should now be set back at the original settings:

Outer: #BDFHJLNPRTVXZACEGIKMOQSUY

Middle: #EJOTYCHMRWAFKPUZDINSXBGLQV

Inner: #GNUAHOBIPWCJQXDKRYELSZFMT

Do you want to play again: (yes to continue, anything else to exit:) yes

|

Do you want to play again: (yes to continue, anything else to exit:) **yes**

Please select from the menu below:

1. Use default rotor settings
2. Input custom rotor settings

Selection:

1

Using default rotor settings

The Enigma model will use the following settings:

Outer: #BDFHJLNPRTVXZACEGIKMQSUWY
Middle: #EJOTYCHMRWAFKPUZDINSXBGLQV
Inner: #GNUMHOVBIPWCJQXDKRYELSZFMT

Would you like to:

1. Encrypt
2. Decrypt
3. Run Default Example

1

You have chosen to encrypt string

Enter the string you want to encrypt:

Computer science is a good major and UW is a good university to transfer to

After encrypting but before resetting the rotors are:

Outer: #BDFHJLNPRTVXZACEGIKMQSUWY
Middle: QV#EJOTYCHMRWAFKPUZDINSXBGL
Inner: OVBIPWCJQXDKRYELSZFMT#GNUMH

You have chosen to encrypt string

Enter the string you want to encrypt:

Computer science is a good major and UW is a good university to transfer to

After encrypting but before resetting the rotors are:

Outer: #BDFHJLNPRTVXZACEGIKMQSUWY
Middle: QV#EJOTYCHMRWAFKPUZDINSXBGL
Inner: OVBIPWCJQXDKRYELSZFMT#GNUMH

Your encrypted string is: OK#EKNJTANWPD LJABJEZCFMGXVJV FNTYFJTETGYQYTNRUAVLJYLLMWT CGSAGYYZVVKFPVSVEMMN

Initially, the rotors are:

Outer: #BDFHJLNPRTVXZACEGIKMQSUWY
Middle: #EJOTYCHMRWAFKPUZDINSXBGLQV
Inner: #GNUMHOVBIPWCJQXDKRYELSZFMT

The Enigma model should now be set back at the original settings:

Outer: #BDFHJLNPRTVXZACEGIKMQSUWY
Middle: #EJOTYCHMRWAFKPUZDINSXBGLQV
Inner: #GNUMHOVBIPWCJQXDKRYELSZFMT

Do you want to play again: (yes to continue, anything else to exit:) **yes**

Please select from the menu below:

1. Use default rotor settings
2. Input custom rotor settings

Selection:

Do you want to play again: (yes to continue, anything else to exit:) **yes**

Please select from the menu below:

1. Use default rotor settings
2. Input custom rotor settings

Selection:

2

Using custom rotor settings

Enter the inner rotor string:

#RYEVBIGNUAHOPWCJLSZFQXDKMT

Enter the middle rotor string:

#HMRWAFKPEUZDINSXBGLQVJOTYC

The Enigma model will use the following settings:

Outer: #BDFHJLNPRTVXZACEGIKMOQSUY

Middle: #HMRWAFKPEUZDINSXBGLQVJOTYC

Inner: #RYEVBIGNUAHOPWCJLSZFQXDKMT

Would you like to:

1. Encrypt
2. Decrypt
3. Run Default Example

Would you like to:

1. Encrypt
2. Decrypt
3. Run Default Example

3

You have chosen to use the default string: Computer Programming is Lots of Fun

After encrypting but before resetting the rotors are:

Outer: #BDFHJLNPRTVXZACEGIKMOQSUY

Middle: C#HMRWAFKPEUZDINSXBGLQVJOTY

Inner: ZFQXDKMT#RYEVBIGNUAHOPWCJLS

Your encrypted string is: YV#RVBFPPMOCNJTJVCWWD#VCJUHAILEDJ##

Initially, the rotors are:

Outer: #BDFHJLNPRTVXZACEGIKMOQSUY

Middle: #HMRWAFKPEUZDINSXBGLQVJOTYC

Inner: #RYEVBIGNUAHOPWCJLSZFQXDKMT

If we now decode this string, we get: COMPUTER PROGRAMMING IS LOTS OF FUN

The Enigma model should now be set back at the original settings:

Outer: #BDFHJLNPRTVXZACEGIKMOQSUY

Middle: #HMRWAFKPEUZDINSXBGLQVJOTYC

Inner: #RYEVBIGNUAHOPWCJLSZFQXDKMT

Do you want to play again: (yes to continue, anything else to exit:)

1. The first thing that I found was that Scanner `console.nextInt()` followed by a Scanner `console.nextLine()` doesn't work. `console.nextInt()` works, but `console.nextLine()` is skipped. The solution is as follows:
`Int x= console.nextInt();`
`console.nextLine();`
`String s= console.nextLine();`
2. The second was the encrypt process and decrypt process is not just simply reversed. Since there are 27 chars in all 3 rotors, if the string to be encrypted has more than 27 chars, the middle rotor will rotate clockwise once when the code moves to the 27th char. However, the decrypt process is different because it doesn't work if we just reverse it by moving the middle rotor when we decrypt the 27th char. Assume we have a 30-char string. If we count the numbers required to move the middle rotor counter clockwise, it's actually $30-27+1=4$.
3. The third was combining all the methods defined in the Engima class and client class was a little time-consuming.
4. The last thing was that I learnt how to write documentation in Javadoc comments.