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Object Oriented Programming
Final Project

The Message class initialized variables that are needed for encryption and decryption . The PlainTextMsg class inherits from the message class and encrypts the text. The CipherTextMsg class inherits from the message class and decrypts the text. We used the super keyword to inherit the variables from the Message class similar to Figure 1. Unlike the other ciphers, playfair ciphers had more steps to encrypt and decrypt. We decided to make this cipher into a class and inherit it in the main class. Since RSA is more complex to encrypt and decrypt, we decided to make this cipher into a class and inherit it in the main class. The main function uses exception handling similar to Figure 3 to ask the user for a message and key. The main function loops until the user says stop. While looping the function performs the encryption/decryption, the applied method, the plain text and the cipher text is added to a dictionary. Once the user says stop, it will loop through the dictionary and display all the encryptions and decryptions the program has done.

```
class BaseClass:
    num_base_calls = 0
    def call_me(self):
        print("Calling method on Base Class")
        self.num_base_calls += 1
class LeftSubclass(BaseClass):
    num_left_calls = 0
    def call_me(self):
        super().call_me()
        print("Calling method on Left Subclass")
        self.num_left_calls += 1
class RightSubclass(BaseClass):
    num_right_calls = 0
    def call_me(self):
        super().call_me()
        print("Calling method on Right Subclass")
        self.num_right_calls += 1
class Subclass(LeftSubclass, RightSubclass):
    num_sub_calls = 0
    def call_me(self):
        super().call_me()
        print("Calling method on Subclass")
        self.num_sub_calls += 1
```

Figure 1. Super Keyword

Plaintext Digraph	Square					Rule	Ciphertext Digraph
di	P	L	A	Y	F	Rule 4: Rectangle	BE
	I	→	E	X	M		
	B	←	D	G	H		
	K	N	O	Q	S		
	T	U	V	W	Z		

Figure 2. Playfair cipher concept

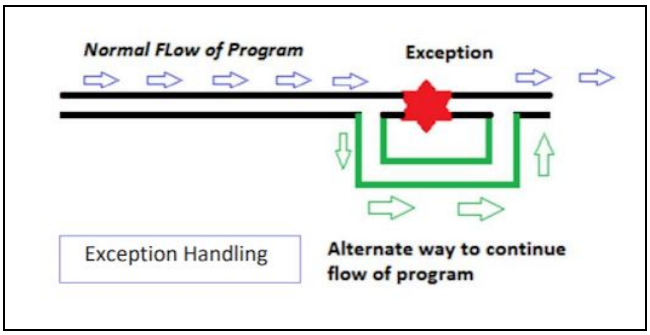

Figure 3. Exception Handling

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