Assignment 3

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Python Programming Assignment: "Secret Code Generator"

```
# Function to encode a message
def encode_message(message, shift):
    encoded = ""
    for char in message:
        if char.isalpha():
            base = ord('A') if char.isupper() else ord('a')
            # Wrap around the alphabet
            new_char = chr((ord(char) - base + shift) % 26 +
                           base)
            encoded += new_char
        else:
            # Keep punctuation, numbers, spaces as-is
            encoded += char
    return encoded

# Function to decode a message
def decode_message(message, shift):
    # Decoding is simply encoding in reverse
    return encode_message(message, -shift)

# Function to show user menu
def menu():
    print("\n--- Secret Code Generator ---")
    print("1. Encode a message")
    print("2. Decode a message")
```

```
    print("3. Exit")
# Main program loop
def main():
    while True:
        menu()
        choice = input("Enter your choice (1/2/3): ")

        if choice == '1':
            message = input("Enter the message to encode: ")
            try:
                shift = int(input("Enter the shift number: "))
                result = encode_message(message, shift)
                print("Encoded Message:", result)
            except ValueError:
                print("Invalid shift. Please enter a number.")

        elif choice == '2':
            message = input("Enter the message to decode: ")
            try:
                shift = int(input("Enter the shift number: "))
                result = decode_message(message, shift)
                print("Decoded Message:", result)
            except ValueError:
                print("Invalid shift. Please enter a number.")

        elif choice == '3':
            print("Exit")
            break
        else:
            print("Invalid choice. Please select 1, 2, or 3.")
```

Output:

```
--- Secret Code Generator ---
1. Encode a message
2. Decode a message
3. Exit
Enter your choice (1/2/3): 1
Enter the message to encode: abc
Enter the shift number: 4
Encoded Message: efg

--- Secret Code Generator ---
1. Encode a message
2. Decode a message
3. Exit
Enter your choice (1/2/3): 2
Enter the message to decode: efg
Enter the shift number: 4
Decoded Message: abc

--- Secret Code Generator ---
1. Encode a message
2. Decode a message
3. Exit
Enter your choice (1/2/3): 1
Enter the message to encode: z
Enter the shift number: 2
Encoded Message: b

--- Secret Code Generator ---
1. Encode a message
2. Decode a message
3. Exit
Enter your choice (1/2/3): 2
Enter the message to decode: xyz
Enter the shift number: 4
Decoded Message: tuv

--- Secret Code Generator ---
1. Encode a message
2. Decode a message
3. Exit
Enter your choice (1/2/3): 3
Exit
```