Name_____ 05.02 ASCII Code

This assignment has three parts.

Part One: Programming

Write a program to encode and decode a message. Use the following guidelines to write your program:

1. Think of a secret message you want to encode. Be creative! Maybe a famous quote, a favorite lyric, or your personal motto.
2. Using the `ord()` and `chr()` functions, encode and decode the message.
3. Optional: Ask the user to guess the message before revealing it.
   Display the encoded message in binary, or include a twist by adding 2 to the number.
   When decoding, remember to reverse the steps.
4. Neatly print the encoded and decoded messages to the screen.
5. Write the pseudocode for this program. Be sure to include any needed input, calculations, and output.

Insert your pseudocode here:

- **Define main**
  - **Set message to "message"**
  - **Set encoded_message to empty**
  - **For character in message**
    - **Set encoded char to char unicode of char + 2**
    - **Set encoded_message += encoded_char**
  - **Print "Encoded message (binary representation):"**
  - **For char in encoded_message**
    - **Set binary_representation to strip first 2 of binary of unicode of character**
    - **Print binary_representation fill 8 end ' '**
  - **Print newline**
  - **Set user_guess to the input of "Guess the secret message: "**
  - **If user_guess equals message**
    - **Print "Correct!"**

- Else
  - Print “Try Again!”
- Set decoded_message to empty
- For char in encodede_message
  - Set Decoded_character to char of unicode of char -2
  - Set decoded_message += decodede_character
- Print "\nDecoded message:"
- Print decoded_message

❖ Call main

Part Two: Code the program

```
#Jonathan Meyer
# 10/30/24
# a program to encode and decode a message
def main():
    # Step 2: Define a secret message
    message = "toes"

    # Step 3: Initialize an empty string for the encoded message
    encoded_message = ""

    # Step 4: Loop through each character in the message
    for character in message:
        # Add 2 to the ASCII value of the character
        encoded_character = chr(ord(character) + 2)
        # Append the new character to the encoded message
        encoded_message += encoded_character

    # Step 5: Display the encoded message in binary
    print("Encoded message (binary representation):")
```

```
    for character in encoded_message:
        # Convert to binary and slice '0b' prefix
        binary_representation = bin(ord(character))[2:]  # Remove '0b'
prefix
        print(binary_representation.zfill(8), end=' ')  # Pad with zeros
to ensure 8 bits
    print("\n")

    # Step 6: Prompt user to guess the message
    user_guess = input("Guess the secret message: ")

    # Step 7: Check the user's guess
    if user_guess == message:
        print("Correct!")
    else:
        print("Try again!")

    # Step 9: Initialize an empty string for the decoded message
    decoded_message = ""

    # Step 10: Loop through each character in the encoded message
    for character in encoded_message:
        # Subtract 2 from the ASCII value of the character
        decoded_character = chr(ord(character) - 2)
        # Append the new character to the decoded message
        decoded_message += decoded_character

    # Step 11: Display the decoded message
    print("\nDecoded message:")
    print(decoded_message)

main()
```

Use the following guidelines to code your program:

1. To code the program, use the Python IDLE.
2. Using comments, type a heading that includes your name, today's date, and a short description of the program.
3. Follow the Python style conventions regarding indentation and the use of white space to improve readability.
4. Use meaningful variable names.

Example of expected output: The output for your program should resemble the following screen shot. Your specific results will vary depending on the choices you make and the input provided.

Output:

```
The encoded message:
[84, 114, 121, 32, 110, 111, 116, 32, 116, 111, 3
2, 98, 101, 99, 111, 109, 101, 32, 97, 32, 109, 9
7, 110, 32, 111, 102, 32, 115, 117, 99, 99, 101, 1
15, 115, 32, 98, 117, 116, 32, 114, 97, 116, 104,
101, 114, 32, 116, 114, 121, 32, 116, 111, 32, 98,
101, 99, 111, 109, 101, 32, 97, 32, 109, 97, 110,
32, 111, 102, 32, 118, 97, 108, 117, 101, 46, 32,
45, 65, 108, 98, 101, 114, 116, 32, 69, 105, 110,
115, 116, 101, 105, 110]

The decoded message:
Try not to become a man of success but rather try
to become a man of value. -Albert Einstein
```

Insert a copy of your code from IDLE here:

Part Three: Post Mortem Review

Complete the Post Mortem Review (PMR). Write thoughtful two- to three-sentence responses to all the questions in the PMR chart.

Review Question	Response
What was the purpose of your program?	a program to encode and decode a message.

How could your program be useful in the real world?	To encrypt messages to send back and forth between a secure web server.
What is a problem you ran into, and how did you fix it?	Actually converting the message. Use some online resources.
Describe one thing you would do differently the next time you write a program.	Use more algorithms to make the program execute faster