11. python program for encoding and decoding using base64

```
import base64

def main():
    while True:
        print("\nBase64 Encoding and Decoding")
        print("1. Encode")
        print("2. Decode")
        print("3. Exit")

        choice = input("Enter your choice (1/2/3): ")

        if choice == '1':
            data = input("Enter the string to encode: ")
            encoded_data = base64.b64encode(data.encode()).decode()
            print(f"Encoded data: {encoded_data}")

        elif choice == '2':
            encoded_data = input("Enter the encoded string to decode: ")
            decoded_data = base64.b64decode(encoded_data).decode()
            print(f"Decoded data: {decoded_data}")

        elif choice == '3':
            print("Exiting. Goodbye!")
            break

        else:
            print("Invalid choice. Please try again.")

if __name__ == "__main__":
    main()
```

Output:

```
Base64 Encoding and Decoding
1. Encode
2. Decode
3. Exit
Enter your choice (1/2/3): 1
Enter the string to encode: abc
Encoded data: YWJj
```

Base64 Encoding and Decoding
1. Encode
2. Decode
3. Exit
Enter your choice (1/2/3): 2
Enter the encoded string to decode: YWJj
Decoded data: abc

Base64 Encoding and Decoding
1. Encode
2. Decode
3. Exit
Enter your choice (1/2/3): 3
Exiting. Goodbye!