Week 1 Practice Lecture Exercise Series

All subroutines to be executed in the console

Problems

Problem 1: Simple Output

Problem: Create a subroutine that displays a welcome message for The Media Hub, including information about how long they've been in business.

Code:

```
def welcome_message():
    print("Welcome to The Media Hub!")
    print("We have been serving entertainment enthusiasts since 1995.")

>>> welcome_message()
```

Output:

```
Welcome to The Media Hub!
We have been serving entertainment enthusiasts since 1995.
```

Problem 2: Multiple Outputs

Problem: Develop a subroutine that prints detailed information about The Media Hub, including its welcome message, founding year, location, and specialty.

Code:

```
def store_information():
    print("Welcome to The Media Hub!")
    print("We have been serving entertainment enthusiasts since 1995.")
    print("Location: 123 Entertainment Avenue, Mediaville")
    print("Speciality: Rare and vintage films, music, and games")

>>> store_information()
```

Output:

```
Welcome to The Media Hub!
We have been serving entertainment enthusiasts since 1995.
Location: 123 Entertainment Avenue, Mediaville
Speciality: Rare and vintage films, music, and games
```

Problem 3: Numerical Input and Calculation

Problem: Write a subroutine that calculates and displays the user's birth year based on their age input, relating it to the founding year of The Media Hub.

Code:

```
def calculate_birth_year():
    print("Welcome to The Media Hub!")
    print("We have been serving entertainment enthusiasts since 1995.")

    age = int(input("Please enter your age: "))
    birth_year = 1995 + (2024 - age)
    print("You were born in", birth_year, ",", birth_year - 1995,
"years after our opening!")

>>> calculate_birth_year()
```

Output (assuming the user enters 25):

```
Welcome to The Media Hub!
We have been serving entertainment enthusiasts since 1995.
Please enter your age: 25
```

```
You were born in 1999, 4 years after our opening!
```

Problem 4: Two Inputs and Calculation

Problem: Create a subroutine that calculates a birthday discount for a product based on the user's age and the item's price, with the discount percentage equal to the age (capped at 50%).

Code:

```
def birthday_discount():
    print("Welcome to The Media Hub!")

    age = int(input("Please enter your age: "))
    item_price = float(input("Enter the price of your favorite film, album, or game: $"))

    discount = min(age, 50)  # Cap discount at 50%
    discounted_price = item_price * (1 - discount/100)

    print("For your", age, "th birthday, we'll give you a", discount, "% discount!")
    print("Your item would cost: $", round(discounted_price, 2))

>>> birthday_discount()
```

Output (assuming the user enters 30 and $50.00):

```
Welcome to The Media Hub!
Please enter your age: 30
Enter the price of your favorite film, album, or game: $50.00
For your 30th birthday, we'll give you a 30% discount!
Your item would cost: $35.00
```

Problem 5: Multiple Inputs

Problem: Develop a subroutine that provides a personalized recommendation based on the user's name, age, and favorite media type, including information about a potential birthday discount.

Code:

```
def personalized_recommendation():
    print("Welcome to The Media Hub!")

    name = input("What's your name? ")
    age = int(input("What's your age? "))
    media_type = input("What's your favorite media type (film, music, or game)? ")

    print("Hi", name, "! We love", media_type, "too!")
    print("As you're", age, ", you might enjoy our", age, "% birthday discount!")
    print("Check out our", media_type, "section for great deals!")

>>> personalized_recommendation()
```

Output (assuming the user enters "Alice", 28, and "film"):

```
Welcome to The Media Hub!
What's your name? Alice
What's your age? 28
What's your favorite media type (film, music, or game)? film
Hi Alice! We love film too!
As you're 28, you might enjoy our 28% birthday discount!
Check out our film section for great deals!
```

Problem 6: Fixed Loop

Problem: Write a subroutine that displays a welcome message followed by repeating the phrase "I love entertainment!" five times.

Code:

```
def repeat_message():
    print("Welcome to The Media Hub!")

    for i in range(5):
        print("I love entertainment!")
```

```
>>> repeat_message()
```

Output:

```
Welcome to The Media Hub!
I love entertainment!
I love entertainment!
I love entertainment!
I love entertainment!
I love entertainment!
```

Problem 7: User-Defined Loop

Problem: Create a subroutine that allows the user to specify how many times the phrase "Media is great!" should be repeated and then displays it that number of times.

Code:

```
def custom_repeat_message():
    print("Welcome to The Media Hub!")

    repeat_count = int(input("How many times should we say 'Media is great!'? "))

    for i in range(repeat_count):
        print("Media is great!")

>>> custom_repeat_message()
```

Output (assuming the user enters 3):

```
Welcome to The Media Hub!
How many times should we say 'Media is great!'? 3
Media is great!
Media is great!
Media is great!
```

Problem 8: Loop with Incrementing Output

Problem: Develop a subroutine that counts up to a user-specified number, displaying each number in sequence.

Code:

```
def count_up():
    print("Welcome to The Media Hub!")
    max_number = int(input("Enter a number: "))
    print("Counting up to", max_number, ":")
    for i in range(1, max_number + 1):
        print(i)

>>> count_up()
```

Output (assuming the user enters 5):

```
Welcome to The Media Hub!
Enter a number: 5
Counting up to 5:
1
2
3
4
5
```

Problem 9: Loop with Calculations

Problem: Write a subroutine that creates a visual rating scale based on a user-specified maximum rating, using asterisks to represent each rating level.

Code:

```
def rating_scale():
    print("Welcome to The Media Hub!")

    max_rating = int(input("Enter the maximum rating for the scale: "))
```

```
    print("Rating scale up to", max_rating, ":")
    for i in range(1, max_rating + 1):
        stars = "*" * i
        print(i, ":", stars)

>>> rating_scale()
```

Output (assuming the user enters 5):

```
Welcome to The Media Hub!
Enter the maximum rating for the scale: 5
Rating scale up to 5:
1 : *
2 : **
3 : ***
4 : ****
5 : *****
```

Problem 10: Complex Loop with Initial Inputs

Problem: Create a subroutine that calculates the potential future value of a media collection over 10 years, based on an initial value and annual appreciation rate provided by the user. The subroutine should display the value for each year and conclude with how many new releases the final value could purchase.

Code:

```
def collection_value_calculator():
    print("Welcome to The Media Hub Collection Value Calculator!")

    initial_value = float(input("Enter your initial collection value: $"))
    appreciation_rate = float(input("Enter the annual appreciation rate (%): "))

    print("\nYear\tValue")
    value = initial_value
    for year in range(1, 11):
        value *= (1 + appreciation_rate / 100)
```

```
        print(year, "\t$", round(value, 2))

    print("\nAfter 10 years, your collection could buy", int(value / 60), "new releases at $60 each!")

>>> collection_value_calculator()
```

Output (assuming the user enters $1000 and an appreciation rate of 5%):

```
Welcome to The Media Hub Collection Value Calculator!
Enter your initial collection value: $1000
Enter the annual appreciation rate (%): 5

Year    Value
1       $1050.00
2       $1102.50
3       $1157.63
4       $1215.51
5       $1276.28
6       $1340.10
7       $1407.10
8       $1477.46
9       $1551.33
10      $1628.89

After 10 years, your collection could buy 27 new releases at $60 each!
```