

Assignment 3

Conditional and Looping Statements

Exercise 1

Name your file: MonthNames.py

Write a program that reads an integer value between 1 and 12 from the user and prints output the corresponding month of the year.

An example run of the program (numbers in bold are typed in by the user)

Enter the month: 3

Month 3 is March

```
# 1) Program to find month of the year
def main():
    months = [
        "January", "February", "March", "April", "May", "June",
        "July", "August", "September", "October", "November", "December"
    ]

    try:
        month_number = int(input("Enter the month: "))

        if 1 <= month_number <= 12:
            print(f"Month {month_number} is {months[month_number - 1]}.")

    except ValueError:
        print("Error: Invalid input. Please enter an integer.")

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

```
Enter the month: 4
Month 4 is April.
```

Exercise 2

A certain cinema currently sells tickets for a full price of 6 pounds, but always sells tickets for half price to people who are less than 16 years old, and for a third of the price for people who are 60 years old or more.

An example run of the program (numbers in bold are typed in by the user)

Enter your age: 63

Your ticket costs £2.00

```
# 2) Calculate ticket price
def calculate_ticket_price():
    full_price = 6.0

    try:
        age = int(input("Enter your age: "))

        if age < 16:
            ticket_price = full_price / 2
        elif age >= 60:
            ticket_price = full_price / 3
        else:
            ticket_price = full_price

        print(f"Your ticket costs £{ticket_price:.2f}.")

    except ValueError:
        print("Error: Please enter a valid integer for your age.")

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

```
Enter your age: 23
Your ticket costs £6.00.
```

Exercise 3

Name your file: BodyMassIndex.py

Write a program to calculate your BMI and give weight status. Body Mass Index (BMI) is an internationally used measurement to check if you are a healthy weight for your height. The metric BMI formula accepts weight in kilograms and height in meters:

$BMI = \text{weight(kg)} / \text{height}^2(\text{m}^2)$

BMI Weight Status Categories table

BMI range - kg/m^2

Category:

Below 18.5 Underweight

18.5 -24.9 Normal

25 - 29.9 Overweight

30 & Above Obese

An example run of the program (numbers in bold are typed in by the user)

Enter your weight in (kg): **75**

Enter your height in (m): **1.70**

Your BMI is: 25.95

You are in the "overweight" range.

```
# 3) Calculate BMI
def calculate_bmi():
    try:
        weight = float(input("Enter your weight in (kg): "))
        height = float(input("Enter your height in (m): "))

        if weight <= 0 or height <= 0:
            print("Error: Weight and height must be positive numbers.")
            return

        bmi = weight / (height ** 2)

        if bmi < 18.5:
            status = "Underweight"
        elif 18.5 <= bmi <= 24.9:
            status = "Normal"
        elif 25 <= bmi <= 29.9:
            status = "Overweight"
        else:
            status = "Obese"

        print(f"Your BMI is {bmi:.2f}. You are in the {status} range.")

    except ValueError:
        print("Error: Please enter valid numeric values for weight and height.")

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

```
Enter your weight in (kg): 54
Enter your height in (m): 1.54
Your BMI is 22.77. You are in the Normal range.
```

Exercise 4

Write a Python program to receive 3 numbers from the user and print the greatest among them.

```
# 4) Find the greatest number
def find_greatest():
    try:
        num1 = float(input("Enter the first number: "))
        num2 = float(input("Enter the second number: "))
        num3 = float(input("Enter the third number: "))

        if num1 >= num2 and num1 >= num3:
            greatest = num1
        elif num2 >= num1 and num2 >= num3:
            greatest = num2
        else:
            greatest = num3

        print(f"The greatest number is {greatest}.")

    except ValueError:
        print("Error: Please enter valid numbers.")

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

```
Enter the first number: 3
Enter the second number: 5
Enter the third number: 7
The greatest number is 7.0.
```

Exercise 5

Find the factorial of a given number using loops(note the number is received from the user)

```
# 5) Find factorial
def calculate_factorial():
    try:
        num = int(input("Enter a number: "))

        factorial = 1

        for i in range(1, num + 1):
            factorial *= i

        print(f"The factorial of {num} is {factorial}.")

    except ValueError:
        print("Error: Please enter a valid integer.")

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

```
Enter a number: 5
The factorial of 5 is 120.
```

Exercise 6

Reverse a number using while loop

```
# 6) Reverse the number
def reverse_number():
    try:
        num = int(input("Enter an integer: "))

        reversed_num = 0

        while num > 0:
            digit = num % 10
            reversed_num = reversed_num * 10 + digit
            num = num // 10

        print(f"The reversed number is {reversed_num}.")

    except ValueError:
        print("Error: Please enter a valid integer.")

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

```
Enter an integer: 56758
The reversed number is 85765.
```

Exercise 7

Finding the multiples of a number using loop

```
# 7) Find multiples
def find_multiples():
    try:
        num = int(input("Enter a number: "))
        limit = 50

        print(f"Multiples of {num} are:")

        for i in range(1, limit + 1):
            multiple = num * i
            if multiple > limit:
                break
            print(multiple, end=" ")
        print()

    except ValueError:
        print("Error: Please enter valid positive integers.")

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

```
Enter a number: 5
Multiples of 5 are:
5 10 15 20 25 30 35 40 45 50
```

Exercise 8

Write a program to print the inputted value as it is and break the loop if the value is 'done'.

Example run of the program

:hello there

hello there

:finished

finished

:done

Done

```
# 8) Print the inputted value as it is
def echo_until_done():
    while True:
        user_input = input("Enter a value: ")

        if user_input == 'done':
            print("Exiting the Loop")
            break

        print(f"You entered: {user_input}")

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

```
Enter a value: hello world
You entered: hello world
Enter a value: done
Exiting the loop
```

Exercise 9

Write a program that prints the numbers from 1 to 10. But for multiples of three print "Fizz" instead of the number and for the multiple of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz"

```
# 9) Print Fizz and Buzz
def fizz_buzz():
    for num in range(1, 11):
        if num % 3 == 0 and num % 5 == 0:
            print("FizzBuzz")
        elif num % 3 == 0:
            print("Fizz")
        elif num % 5 == 0:
            print("Buzz")
        else:
            print(num)

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

```
1
2
Fizz
4
Buzz
Fizz
7
8
Fizz
Buzz
```

Exercise 10

Write a program to print the following pattern:

5 4 3 2 1

4 3 2 1

3 2 1

2 1

1

```
# 10) Print pattern
def print_pattern():
    for i in range(5, 0, -1):
        for j in range(i, 0, -1):
            print(j, end=" ")
        print()

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

```
5 4 3 2 1
4 3 2 1
3 2 1
2 1
1
```