**Lab 3: If-else, if-elif-else, repetition**

**Objective:**

The objective is to practice the concepts of conditionals and repetitions in Python.

**Questions:**

***1. Prompt the user to enter a mark between 0 and 100 and to print “This is a pass” if the mark is 40 or over, and “This is a fail” if the mark is below 40. Hint: use >=***

mark = int(input(“Please enter a mark between 0 and 100: ”))

if mark >= 40:

print(“This is a pass”)

else:

print(“This is a fail”)

***2. Prompt the user to enter two integer numbers, and output if the first is larger, smaller or equal to the second one. Use if-elif-else***

number1 = int(input(“Please enter an integer number: ”))

number2 = int(input(“Please enter another integer number: ”))

if number1 > number2:

print(number1, “is greater than”, number2)

elif number1 == number2:

print(“Both numbers are the same”)

else:

print(number2, “is greater than”, number1)

***3. Write a small calculator simulator – ask the user to enter two numbers and an operation (+, -, \*, /), and either add, subtract, multiply or divide the numbers, and print the result.***

number1 = float(input(“Please enter a number: ”))

number2 = float(input(“Please enter another number: ”))

operator = input(“Please enter an operator (\*, /, -, +): ”)

if operator == “+”:

print(number1, “+”, number2, “=”, number1 + number2)

elif operator == “-”:

print(number1, “-”, number2, “=”, number1 - number2)

elif operator == “\*”:

print(number1, “\*”, number2, “=”, number1 \* number2)

elif operator == “/”:

print(number1, “/”, number2, “=”, number1 / number2)

else:

print(“Operator not recognised”)

***4. Prompt the user for three numbers and print which is the largest of the three.***

number1 = float(input(“Please enter a number: ”))

number2 = float(input(“Please enter another number: ”))

number3 = float(input(“Please enter another number: ”))

if number1 > number2 and number1 > number3:

print(number1, “is the largest”)

elif number2 > number3:

print(number2, “is the largest”)

else:

print(number3, “is the largest”)

***5. What output occurs for the following program on the given input?***

user\_str = input(**"Enter a positive integer:"**) *# Line 1*

my\_int = int(user\_str)

count = 0

**while** my\_int>0:

**if** my\_int % 2 == 1:

my\_int = my\_int//2

**else**:

my\_int = my\_int - 1

count += 1 *# Line 2*

print(count) *# Line 3*

print(my\_int) *# Line 4*

***(a) Given user input of 11, what value is output by # Line 3 of the program?***

my\_int = 11 // 2 = 5 // 2 = 2 – 1 = 1 // 2 = 0

count = 4

Results:

4

0

***(b) Given user input of 12, what value is output by # Line 4 of the program***

my\_int = 12 – 1 = 11 // 2 = 5 // 2 = 2 – 1 = 1 // 2 = 0

count = 5

Results:

5

0

***(c) What type is referenced by (associated with) user val in # Line 1 of the program?***

It is always a string and then we have to convert it into an integer or other data type.

***(d) What is the purpose of the = (equal sign) on #Line 2 of the program?***

It is adding 1 to a variable. “+=” is a shortcut in Python.

***(e) What is the purpose of the : (colon) at the end of the while statement?***

The colon : indicates the end of the while statement.

***6. Implement the solutions of Lab 4 adding the inputs for each possible parameters:***

***a) Ask the user to input the number of cigars and if it is the weekend or not.***

cigars = int(input(“Please enter the number of cigars: ”))

is\_weekend = input(“Is it the weekend? (y/n): ”)

if 40 <= cigars <= 60 and is\_weekend == “n”:

print(“Party is successful!”)

elifis\_weekend == “y” and 40 <= cigars:

print(“Party is successful!”)

else:

print(“Party is not successful!”)

***b) Ask the user to input the temperature and if it is summer or not.***

temperature = float(input(“Please enter the temperature: ”))

is\_summer = input(“Is it summer? (y/n): ”)

if 60 <= temperature <= 90 and is\_summer == “n”:

print(“Let’s play!”)

elif 60 <= temperature <= 100 and is\_summer == “y”:

print(“Let’s play!”)

else:

print(“Let’s not play!”)

***c) Ask the user to input the speed and if it is your birthday or not.***

speed = float(input(“Please enter the speed: ”))

birthday = input(“Is it your birthday? (y/n): ”)

extra\_speed = 0

if birthday == “y”:

extra\_speed = 5

if speed <= 60 + extra\_speed:

print(“No ticket”)

elif 61 + extra\_speed<= speed <= 80 + extra\_speed:

print(“Small ticket”)

else:

print(“Big ticket”)

***7. How many three-digit numbers are divisible by 17? Write a program to print them.***

for number in range(100, 1000):

if number % 17 == 0:

print(number)

***8. Sum of consecutive integers***

***(a) Write a program that prompts for an integer — let’s call it X — and then finds the sum of X consecutive integers starting at 1. That is, if X = 5, you will find the sum of 1 + 2 + 3 + 4 + 5 = 15.***

X = int(input(“Please enter a positive integer: ”))

index = 1

sum = 0

while index <= X:

sum += index

index += 1

print(“sum is”, sum)

***(b) Modify your program by enclosing your loop in another loop so that you can find consecutive sums. For example, if 5 is entered, you will find five sums of consecutive numbers:***

***1 = 1***

***1 + 2 = 3***

***1 + 2 + 3 = 6***

***1 + 2 + 3 + 4 = 10***

***1 + 2 + 3 + 4 + 5 = 15***

X = int(input(“Please enter a positive integer: ”))

small\_x = 1

while small\_x<= X:

index = 1

sum = 0

while index <= small\_x:

sum += index

index += 1

print(“Sum is”, sum)

small\_x += 1

***(c) Modify your program again to only print sums if the sum is divisible by the number of operands. For example, with the sum 1 + 2 + 3 + 4 + 5 = 15, there are five operands and the sum, 15, is divisible by 5, so that sum will be printed. (Do you notice a pattern?)***

X = int(input(“Please enter a positive integer: ”))

small\_x = 1

while small\_x<= X:

index = 1

sum = 0

count = 0

while index <= small\_x:

sum += index

count += 1

index += 1

if sum % count == 0:

print(“Sum is”, sum)

small\_x += 1

The pattern is increasing by 4.

5 9 13 17 21 25 29 33