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

**Objective:**

The objective is to practise the concepts of conditionals and repetitions.

## **Conceptual Practice**

**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 >=

**grade = int(input("Enter your grade (0 - 100): "))**

**if grade >= 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

**num1 = int(input("Enter an integer: "))**

**num2 = int(input("Enter another integer: "))**

**if num1 > num2:**

**print(num1, "is larger than", num2)**

**elif num1 < num2:**

**print(num1, "is smaller than", num2)**

**else:**

**print("Numbers are the same")**

**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.

**num1 = int(input("Enter an integer: "))**

**num2 = int(input("Enter another integer: "))**

**op = input("Enter an operator (+, -, \*, /): ")**

**if op == '+':**

**print(num1, "+", num2, "is", num1 + num2)**

**elif op == '-':**

**print(num1, "-", num2, "is", num1 - num2)**

**elif op == '\*':**

**print(num1, "\*", num2, "is", num1 \* num2)**

**elif op == '/':**

**print(num1, "/", num2, "is", num1 / num2)**

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

**num1 = int(input("Enter an integer: "))**

**num2 = int(input("Enter another integer: "))**

**num3 = int(input("Enter another integer: "))**

**if num1 > num2 and num1 > num3:**

**print(num1, "is the largest number")**

**elif num2 > num1 and num2 > num3:**

**print(num2, "is the largest number")**

**else:**

**print(num3, "is the largest number")**

**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? **4**

(b) Given user input of 12, what value is output by # Line 4 of the program? **0**

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

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

**assignment**

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

statement? **Signifies the beginning of a block of code that belongs to the while loop**

**Critical Thinking Tasks**

**6.** Implement the solutions of the logical problems in the slides for [Lecture 3](https://docs.google.com/presentation/d/1T8oyqwuzAu4oc_jAZHiSq8RJ20QmMN96/edit?usp=sharing&ouid=103225578213741824970&rtpof=true&sd=true) 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("Enter amount of cigars: "))**

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

**if is\_weekend == 'y':**

**if cigars >= 40:**

**print("The party is successful!")**

**else:**

**print("The party is not successful.")**

**else:**

**if 40 <= cigars <= 60:**

**print("The party is successful!")**

**else:**

**print("The party is not successful.")**

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

**temp = int(input("Enter temperature: "))**

**is\_Summer = input("Is it summer? (y/n): ")**

**if is\_Summer == 'y':**

**if 60 <= temp <= 100:**

**print("Yay! Play!")**

**else:**

**print("Can't play :(")**

**else:**

**if 60 <= temp <= 90:**

**print("Yay! Play")**

**else:**

**print("Can't play :(")**

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

**speed = int(input("Enter speed: "))**

**is\_Bday = input("Is it your birthday? (y/n): ")**

**if is\_Bday == 'y':**

**if speed <= 65:**

**print("No ticket!")**

**elif 66 <= speed <= 85:**

**print("Small ticket!")**

**else:**

**print("Big ticket!")**

**else:**

**if speed <= 60:**

**print("No ticket!")**

**elif 61 <= speed <= 80:**

**print("Small ticket!")**

**else:**

**print("Big ticket!")**

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

**start = 100**

**end = 999**

**for number in range(start, end + 1):**

**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("Enter an integer: "))**

**sum = 0**

**for consecutive\_integers in range (1, x + 1):**

**sum += consecutive\_integers**

**print(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

**for i in range (1, x + 1):**

**sum = 0**

**for j in range(1, x + 1):**

**print(j, end =” “)**

(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?)

**for i in range (1, x + 1):**

**sum = 0**

**for j in range(1, i + 1):**

**print(j, end =” “)**

**if sum % i == 0:**

**print(“print”, sum)**

**else:**

**print(“not print”, sum)**