**Lab Exercises**

1. Write a flowchart for withdrawing money from a bank using an ATM card
2. Write a program that prints "Habari Gani" on the screen
3. Write a program that asks the user for their last name and the year of birth. At the end it should print on the screen "You are <<the name>>, born in <<year of birth>>"
4. Write a program that asks the user for the length of the side of a square and the program should compute the perimeter of the square and its area. The output on the screen should be something like --- "The Area is 24 sq. cm, and the Perimeter is 18cm" (24 and 18 are examples only)
5. Write a program that takes from the user the radius of a circle and the program should compute the area of the circle and its circumference. The Output on the screen should look like: "The Area is 56 sq. cm and Circumference is 28cm"
6. Write a program that accepts from the user the values for PRINCIPLE, INTEREST RATE, AND TIME and the program should then compute the Simple Interest.
7. Write a Program that checks the age of a child. If the age is below zero, or above 10, the program should print "WRONG ENTRY", otherwise it should print "VALID AGE"
8. Write a program that prompts for a surname from the user and then count the number of characters in the surname. The system should then print to the screen “Your name is 7 characters long”, where 7 is just an example.
9. Write a program that accepts from the user their first name, and print out the first name with the first letter capitalized.
10. Write a program that accepts from the user a password and check if it is more than 7 characters long. It should print “Sufficient” if it is more than 7 characters long or “Insufficient” if it is less than 7 characters long.
11. Write a program that uses a **`switch-case`** statement to print options for a user of a mobile money application. For 1, the program should print “checking balance”, for 2 it should print “cash transfer”, for 3 it should print “paying bills” and for 4 it should print “cash out”
12. Write a C program in which the user enters his/her salary and the program computes the relevant tax according to Table 1

**Table 1: Salary Ranges**

| Salary Range | Tax |
|---|---|
| <= 170,000 | 0% |
| 170,000 - 360,000 | 11% |
| 360,000 - 540,000 | 20% |

| | |
|---|---|
| 540,000 - 720,000 | 25% |
| > 720,000 | 30% |

13. Write a program that prints a phrase "I LOVE PROGRAMMING" seven times
14. Write a program that prints even integers from 3 to 23
15. Write a program that prints even numbers between 10 and 20, inclusively
16. Write program that prints the sum of the odd numbers between min and max value, where the min and max values are given by the user
17. Write a program that prints the sum of either odd or even numbers between a range that the user provides. The user shall also decide whether they want odd or even
18. Write a function that takes in a value for radius and returns the area of a circle
19. Write a function that takes the age of a person and checks whether it is between 0 and 100. It should return 1 if the age is within the range and 0 if the age is beyond that
20. Write a function that takes in the address of the first address of the array and an integer value for the array size. The function should then subtract 7 from each element but should return nothing.
21. Write a function that takes in the address of the first address of the array and an integer value for the array size. The function should then multiply each element by two and, later, return the address of the first element.
22. Write a function that takes in two floating point numbers and an integer for option. If the option supplied by the user is 1 the program should return the product of the floating-point numbers and if the option is 2, it should return the sum
23. Write a program that accepts the marks for 5 students and stores them in an array
24. Write a program that accepts marks for students and stores them in an array. The number of students to be provided by the user
25. Write a program that accepts marks for students for two subjects and store them in an array. The number of students to be provided by the user
26. Write a program, using arrays, that accepts marks of a test from a number of students marks (the number of students to be provided by the user) and deduct 7 from each. If the resulting mark for an individual is less than 40, it should set the marks to be 40
27. Write a program that accepts marks for students in an array, the size of the array to be given by the user, and compute from the marks, the mean mark, and the average deviation of marks from

the mean. Thus if, for example, the mean was 50, the program computes the difference of each mark and 50 and add these differences and later find their average

28. Write a program that accepts two numbers, num1 and num2, and swap them using pointers
29. Complete the following C program to print the contents of the array using pointers

```
#include<stdio.h>
main(){
int k;
float thearr[] = {2.5, 5, 6.7, 10, 13.3, 25, 0};
...
...
}
```

30. Populate the array "multiarr" with the elements in the array "thearr" by multiplying each element in "thearr" by 3.

```
Use pointers to perform the multication of "thearr" array elements
#include<stdio.h>
main(){
int k;
float multiarr[7];
float thearr[] = {2.5, 5, 6.7, 10, 13.3, 25, 0};
...
...
}
```

31. Write a program through the following activities
    a) Define a structure whose members are; name of type string, age of type integer and salary of type float
    b) Declare an array with 5 elements whose data type is the structure you have defined in (a) above
    c) Write a program that will accept values for the array you have defined in (b) above