Department of ICT
Faculty of Technology
University of Ruhuna

Programming Practicum – ICT1142   **Level 1- Semester 1**

Lab Sheet 06   **| 2022**

Objective:
    To familiarize with selection control structures in C programming language.

if (logical expression)
        statement 1
else
        statement 2
	if (testExpression1)
	{
	   // statements to be executed if testExpression1 is true
	}
	else if(testExpression2)
	{
	   // statements to be executed if testExpression1 is false and testExpression2 is true
	}
	else if (testExpression 3)
	{
	   // statements to be executed if testExpression1 and testExpression2 are false and testExpression3 is true
	}
	..
	else
	{
	   // statements to be executed if all test expressions are false
	}
		switch (variable/expression)
		{
		case c1:
		    statements1;
		    break;
		case c2:
		     statements2;
		     break;
		…
		default:
		    default statements;
		}

Exercise 01

Write a C program which asks the user to **enter age and height**. If **age is greater than 18** and **height is 5 feet or above**. Print "**candidate is selected**", otherwise "**not selected**".

Exercise 02

a. Write a C program to **find maximum between two numbers** using **if-else** statements.

        Example: Input first number: 4
                Input second number: 23

                Output: Maximum number is 23

b. Modify the same program to **find maximum among three numbers using nested if-else.**

c. Modify the part (b) by using **if-else-if ladder**.

Exercise 03

Write a C program to **input character** from the user to **check whether it is a letter in alphabet or not. If it is a letter then check whether a vowel or not.**

Exercise 04

a. Write a C program to make **a simple calculator using switch case**. First you need to type the **first number** then the **operator**, which can be arithmetic operators (+, -, /, *) and finally **second number**. The program should calculate and print the answer according to the arithmetic operator.

        Example:
                Enter the first number: 6
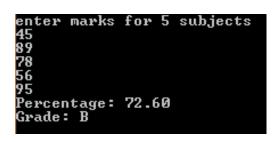   Enter operator: +
                Enter the second number: 3
                Answer: 9

b. Modify the same program using **nested if-else or if-else-if ladder.**

Exercise 05

Write a C program to **input marks of five subject**s ICT, SFT, ET, BST and ENG. Calculate and display the **percentage (average mark of five subjects)** and **grade** according to following criteria.

Percentage >= 80%   : Grade A
Percentage >= 70%   : Grade B
Percentage >= 50%   : Grade C
Percentage >= 40%   : Grade D
Percentage >= 30%   : Grade E
Percentage < 30%   : Grade F

```
enter marks for 5 subjects
45
89
78
56
95
Percentage: 72.60
Grade: B
```

Exercise 06

Write a C program that **reads the customer number** and **units of power consumed** by the customer. Then calculate and print the **amount to be paid** by the customer according to following consumption units.

Units	Charge
0-200	Rs.0.50 per unit
201-400	Rs.100 plus Rs.0.65 per unit excess 200
401-600	Rs.230 plus Rs.0.80 per unit excess of 400.

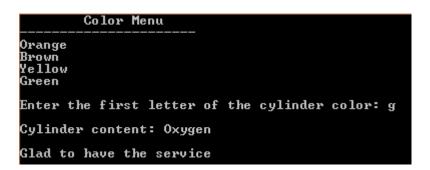**Output Format:** Customer Number:<customer number>   Payment:<Amount to be paid>

```
Enter the customer number: 01
Enter the power consumed: 100


Customer: 1     Payment:Rs.50.00
------------------------------
```
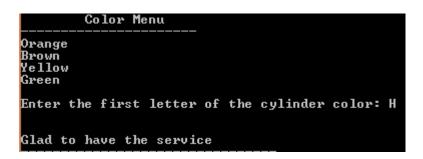
Exercise 07

a. Write a C program that will help the driver of a truck that deliver and pickup compressed-gas cylinders to determine the contents of cylinder based on the color of the cylinder. **The program will print out a menu colors to be entered**. The user should be instructed to **enter the first letter of the color of tank**. Upon reading the letter corresponding to the color of the tank, the program will **print a message, which states the content of the tank**. The program should **accept the letter in either upper or lower case**. Cylinder colors associated contents are as follows.

Orange	ammonia
Brown	Carbon monoxide
Yellow	hydrogen
Green	oxygen

The program should be written using a **switch case**. Program should print a message prior to ending such as '**Glad to have the service**'.


```
          Color Menu
_____
Orange
Brown
Yellow
Green

Enter the first letter of the cylinder color: g

Cylinder content: Oxygen

Glad to have the service
```

If the user enters a color other than one of the four colors specified in the program, then **print only the ending message**.


```
          Color Menu
_____
Orange
Brown
Yellow
Green

Enter the first letter of the cylinder color: H


Glad to have the service
```

b. Modify the same program using **nested if-else or if-else-if ladder.**

Exercise 08

Write a C program to **input the month number** and **output the month name** using **switch** statement.

Exercise 09

Write a C program to **input the month number** and **output the number of dates** per that month using **switch** statement.

Exercise 10

ABC supercenter gives gifts to their customers in the festive season. Gifts are given only if the **total bill value of the customer is more than Rs.10 000.** Customers entitled for the gifts should **first select a number from a raffle box**. Gifts will be given according to the number selected as shown below.

No	Gift Item
1	Tea Set
2	Spoon Set
3	Non Stick Pan
4	Bowl

Write a C program to **enter the bill value** of the customer. If the bill value is **more than Rs.10000, Display a message** "Please select a number from the raffle box" and enter as shown below.

"Congratulations!! You have won a <gift item>"

If an **invalid number** has entered, display an **appropriate error message**.


```
Please enter the bill value: 15000
Please select a number from the raffle box: 2

Congratulations !! You have won a Spoon Set
```