NOTE:

- Create a folder on Desktop to save your works. Name the folder appropriately (e.g. Lab 2)

- Use comment // to write your name, ID, Group and Lab Question in each program.

- Save your file as .c

LAB OBJECTIVES

At the end of this lab activity, the students should be able to:

- Use ***printf()*** and ***scanf()*** functions to display and retrieve data from the user.
- Use escape character "**\n**".
- Apply simple mathematical calculations in C.
- Use different types of constant values like ***#define*** and ***const***.
- Use different data types for different values in a program.

QUESTION 1

Write a program to display the customer name, chocolate price and quantity of chocolate that the customer has purchased. Then calculate and display the total amount to pay.

- Set the chocolate price as the constant with value $ 1.30.
- Declare all necessary variables and set them with the initial values:
  - Customer name: John
  - Quantity of chocolate: 5
- Calculate the total amount to pay.
- Display all the data as shown below.

Note:
This question does not have input from user.

```
Chocolate price: $1.30
John bought 5 units of chocolate.

Total amount to pay: $6.50
```

QUESTION 2

Write a program based on the descriptions below:

Circular velocity refers to the velocity that one object must travel in order to maintain its circular orbit around another object, usually a planet or other gravitating mass. The circular velocity of an object is calculated by dividing the circumference of the circular path by the time period over which the object travels.

Formula : $circular\ velocity = \frac{2\pi r}{T}$ where *r* is radius and *T* is time.

- Set as π constant using preprocessor directive (`#define`)
- Declare all necessary variables.
- Get the radius and time from the user.
- Calculate the circular velocity.
- Display the results as shown below.

```
Enter radius (cm)  : 10
Enter time (s)     : 3.25

Radius    : 10.00 cm
Time      : 3.25 seconds
Circular Velocity : 19.34 cm/s
```

QUESTION 3

Write a program based on the instructions below:

Basal Metabolic rate (BMR) is the number of calories you would burn without doing any activities. The formula:

BMR = 66 + (6.23 x weight in pounds) + (12.7 x height in inches) – (6.8 x age)

- Declare all necessary variables.
- Declare `POUND` as a constant with value *2.20462* using `const` keyword
- Declare `INCH` as a constant with value *39.3701* using `const` keyword
- Ask the user to enter weight in kilograms.
- Ask the user to enter height in meters.
- Ask the user to enter age.
- Convert kilograms to pounds and meters to inches:
  - 1 kilogram is equivalent to 2.20462 pounds
  - 1 meter is equivalent to 39.3701 inches
- Use the given formula to calculate the BMR.
- Display the result as shown below.

```
Enter height (m)  : 1.8
Enter weight (kg) : 75
Enter age         : 23

Height    : 70.87 inches
Weight    : 165.35 pounds
Basal Metabolic Rate (BMR) : 1839.71
```

QUESTION 4

Calculate the total cost of purchasing A4 papers for a student's assignment.

- Using preprocessor directive (`#define`), declare constant values for the price of each piece of A4 paper.
    - White A4 paper costs RM0.05 per piece.
    - Green A4 paper costs RM0.10 per piece.
    - Pink A4 paper costs RM0.15 per piece.
- Declare all necessary variables.
- Ask the user to enter the quantity for each coloured paper.
- Calculate total cost and display as shown below.

```
Quantity of White A4 paper : 20
Quantity of Green A4 paper : 25
Quantity of Pink A4 paper  : 30

White A4 paper : RM 1.00 (20 x 0.05)
Green A4 paper : RM 2.50 (25 x 0.10)
Pink A4 paper  : RM 4.50 (30 x 0.15)
Total          : RM 8.00
```

QUESTION 5

Write a program to calculate how much each individual must pay during a group lunch outing.

- Service Tax of the restaurant is 6%. Declare the Service Tax (ST) as a constant using the preprocessor directive.
- Declare all necessary variables.
- Ask the user to enter the total lunch bill amount.
- Ask the user to enter how many friends are involved in the lunch.
- Calculate the amount of the service tax.
- Calculate the total lunch bill with addition of the service tax amount.
- Divide the amount with the number of friends to get the individual bill.
- Display the information as shown below.

```
Enter the bill for lunch : RM 147.50
Total number of friends  : 6

Lunch bill      : RM 147.50
Service Tax     : RM 8.85
Total bill      : RM 156.35
Individual bill : RM 26.06
```