

1. Describe the C++ development phases.
2. Write the size of the following data types.
 - a. char
 - b. short
 - c. int
 - d. long
 - e. float
 - f. double
3. Give an example of each data type in Question 2 by declaring and initializing the variables with the proper values.
4. We can convert the Fahrenheit degree into Celsius using the following formula:

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times \frac{5}{9}$$

Also, we can convert the Celsius degree into Fahrenheit using the following formula:

$$^{\circ}\text{F} = ^{\circ}\text{C} \times \frac{9}{5} + 32$$

Write a C++ program that reads a temperature value as input and its type (either Celsius “C” or Fahrenheit “F”) and then the program must convert the value to the other type. Examples of a running program:

- a. Enter temperature value: **33.5**
Enter temperature type: **C**
The 33.5 Celsius is equivalent to 92.3 Fahrenheit
 - b. Enter temperature value: **77.6**
Enter temperature type: **F**
The 77.6 Fahrenheit is equivalent to 25.3333 Celsius
5. Consider a father has died and left his money to his wife, 3 sons, and 6 daughters. Based on Islamic’s Sharia, write a C++ program that takes a none integer value and then computes the inheritance (الميراث). Your program shall output the share of each of wife, son, daughter, total sons share, and total daughter share. Note that the shares can be computed as follows: the wife has a share of 1/8 whereas the rest of the share will be divided between the sons and daughter such that sons get double amount of daughters.

Below is an example of a program input/output:

```
Enter the inheritance value: 1000
The wife share is: 125.000
The share of each son is: 145.830
The total share of sons is: 437.490
The share of each daughter is: 72.920
The total share of daughters is: 437.510
```

6. Use the table below to convert the GPA into letter grade. Write a C++ program that takes a number with decimals that represents the GPA and then converts it into a grade using `if-else` statements. The program must output “unknown GPA, exiting program...” to any entered number greater than 4 or less than 1.

GPA	Grade
4.0	A
3.67	A-
3.33	B+
3.0	B
2.67	B-
2.33	C+
2.0	C
1.67	C-
1.33	D+
1	D

Examples of program output

- Enter GPA: **3.45**
Your grade is A-
- Enter GPA: **0.5**
Unknown GPA, exiting program...