**Tutorial - Week 2**

# Objectives:

To discuss basic elements of C such as

* general structure of a C program
* variable declarations and data types
* input / output
* arithmetic expressions

1. **Which of the following declarations are correct? If incorrect, give the reason:**
2. int numStudents = 370;
3. int numLabs = 45.5;
4. double 1value, 2value;
5. char grade = 'P';
6. char stLevel = A;
7. char pinNum = 117;
8. number = 24;
9. #define PI = 3.1416;
10. **Assuming the following variable declarations, what output is produced by printf()?**

int numOfModules = 15, moduleCode = 7; float width = 65.243, height=38.159;

char secLevel = 'B';

1. printf("Number of Modules=%6d\n", numOfModules);

Displayed Output:

1. printf("Module Code = %04d\n", moduleCode);

Displayed Output:

1. printf("Width = %-8.2fHeight = %-8.2f\n", width, height);

Displayed Output:

1. printf("Dimensions = %.1f x %.1f mm\n", width, height);

Displayed Output:

1. printf("Security Level:%3c\n", secLevel);

Displayed Output:

1. **Is scanf() used correctly?**

float x, y;

1. scanf(“Enter a number: %f”, &x);
2. scanf( “%d” , &x);
3. scanf( “%3f”, &x);
4. scanf( “%f, %f”, &x, &y);
5. **Correct mistakes in the program that converts a temperature in Fahrenheit to Celsius: Celsius = 0.55\*(fahrenheit – 32)**

#include <stdio.h>

#define COEFF = 0.55

int main(void)

{

float celsTemp, fahrTemp

printf(' Enter the temperature in Fahrenheits: ');

scanf("%f", fahrTemp );

celsTemp = COEFF \* fahrTemp – 32;

printf("Celsius temperature = %.1f" , fahrtemp );

return 0;

}

1. **Which of the following declarations are correct? If incorrect, give the reason:**
   * + 1. char productType = 'V';
       2. char minutes = 45;
       3. char days = 172;
       4. char value = -15;
       5. float width = 32.157e2;
       6. int length = width;
2. **What value will be assigned to the variables (taking into account all preceding operations)**

int intRes, number = 5;

float fpRes;

char grade = 'A';

* + - 1. intRes = 10/3;
      2. intRes = 10%3;
      3. intRes = 15/2/3;
      4. fpRes = 15.0/2;
      5. intRes = number++;
      6. intRes = ++number;
      7. intRes = (7 + 3)/2;
      8. intRes += 4;
      9. fpRes = intRes/2;
      10. fpRes = (float)intRes/2;
      11. grade += 2;

1. **Evaluate the following:**

**float fa = 29.0, fb = 10.0, fc = 10.37;**

**int ia;**

1. ia = (int)(fa/fb);
2. ia = fa/fb;
3. How to round a float to the nearest int?
4. How to assign only the integer part of fc to fa?
5. **Specify the** lvalue **and** rvalue **in the following statements?**

int a, b=1;

1. a = 1;
2. ++a;
3. b = b + a;
4. a = b++;
5. b = 10++;
6. b = ++(1-a);
7. **Write the #define preprocessor directive and declarations for a program that has a constant macro for PI (3.14159) and variables radius, area, and circumf declared as double, variable num\_circ as an int, and variable circ\_name as a char.**
8. **Write a statement that displays the following line with the value of the type int variable n before the period.**

The value of n is \_\_\_\_\_\_\_\_\_\_\_.

1. **Assuming that side and area are type double variables containing the length of one side in cm and the area of a square in square cm, write a statement that will display this information in this form:**

The area of a square whose side length is \_\_\_\_\_\_ cm is \_\_\_\_\_\_ square cm.

1. **Show how the value −3.6175 would be printed using the formats %8.4f, %8.3f, %8.2f, %8.1f, %8.0f, %.2f.**