Assignment#2

Subject:Programming Fundamentals

Instructor:Dr Nauman Riaz

Prepared By:M Jawad Ashraf

Roll No#25014119-077

Course Code: Cs(102)

Section A(Evening)

Program#1

Write a program to assigned values to three variables at the time of declaration. Print the assigned values on the computer screen.

Code in C:

```
#include <stdio.h>
int main() {
    int a = 5, b = 10, c = 15;
    printf("a = %d\n b = %d\n c = %d\n", a, b, c);
    return 0;
}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
    int a = 5, b = 10, c = 15;
    cout << "a = " << a << "\nb = " << b << "\nc = " << c << '\n';
    return 0;
}
```

Code in JavaScript:

```
const a = 5, b = 10, c = 15;
console.log(a = ${a});
console.log(`b = ${b});
console.log(c = ${c});
```

Code In Python:

```
a, b, c = 5, 10, 15
print("a =", a)
print("b =", b)
print("c =", c)
```

Program#2

Write a program to print a message "C language is a powerful programing language." on screen.

Code in C:

```
#include <stdio.h>
int main() {
   printf("C language is a powerful programing language. ");
   return 0;
}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
   cout << "C language is a powerful programing language." << endl;
   return 0;
}
```

Code in JavaScript:

```
console.log("C language is a powerful programing language.");
```

Code In Python:

```
print("C language is a powerful programing language.")
```

Program#3

Write a program to assign two varibles by assignment statement. Interchange the values and print the result on the screen

Code in C:

```
#include <stdio.h>
int main() {
   int x = 7, y = 12, temp;
     temp = x;
      x = y;
   y = temp;
   printf("Interchanged Values: x = %d, y = %d\n", x, y);
   return 0;
}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
    int x = 7, y = 12, temp;
    temp = x;
    x = y;
    y = temp;
    cout << "After swap: x = " << x << ", y = " << y << '\n';
    return 0;
}
```

Code in JavaScript:

```
let x = 7, y = 12, temp;
temp = x;
x = y;
y = temp;
console.log(`After swap: x = ${x}, y = ${y}`);
```

Code in Python:

```
x, y = 7, 12
x, y = y, x
print("After swap: x =", x, ", y =", y)
```

Program#4:

Write a program to assign the numeric value to a variable year. Calculate the number of months, and print on the screen.

Code in C:

```
#include <stdio.h>
int main() {
    int year, presentYear, months;
    scanf("%d %d", &year, &presentYear);
    months = (presentYear - year) * 12;
    printf("Months: %d", months);
    return 0;}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
    int year, presentYear, months;
    cin >> year >> presentYear;
    months = (presentYear - year) * 12;
    cout << "Months: " << months;
    return 0;
}
```

Code in JavaScript:

```
let year = parseInt(prompt());
let presentYear = parseInt(prompt());
let months = (presentYear - year) * 12;
console.log("Months: " + months);
```

Code in Python:

```
year = int(input())
present_year = int(input())
months = (present_year - year) * 12
print("Months:", months)
```

Program#5

Write a program to get two numbers. Calculate the sum and product of the numbers and then print the result on the screen.

Code in C:

```
 #include <stdio.h>
int main() {
   int a, b;
    scanf("%d %d", &a, &b);
    printf("Sum = %d \n Product = %d \n", a + b, a * b);
    return 0;
}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
int a, b;
    cin >> a >> b;
    cout << "Sum = " << a + b << endl;
    cout << "Product = " << a * b << endl;
    return 0;
}
```

Code in JavaScript:

```
const prompt = require('prompt-sync')();
let a = parseFloat(prompt('Enter first number: '));
let b = parseFloat(prompt('Enter second number: '));
console.log('Sum =', a + b);
console.log('Product =', a * b);
```

Code in Python:

```
a, b = map(int, input().split())
print("Sum =", a + b)
print("Product =", a * b)
```

Program#6

Write a program to get age (in years) of a person. Calculate the age in months and print the age in months

Code in C:

```
#include <stdio.h>
int main() {
    int years;
    scanf("%d", &years);
    printf("Age in months = %d\n", years * 12);
    return 0;
}
```

Code in C++:

```
#include <iostream>
```

```
using namespace std;
int main() {
    int years;
    cin >> years;
    cout << "Age in months = " << years * 12 << endl;
    return 0;
}
```

Code in JavaScript:

```
const readline = require('readline');
const rl = readline.createInterface({ input: process.stdin, output: process.stdout });
rl.question('', input => {
  const years = Number(input);
  console.log('Age in months =', years * 12);
  rl.close();
});
```

Code in Python:

```
years = int(input())
print("Age in months =", years * 12)
```

Program#7:

Write a program to get the Roll No. of a student and marks obtained in three subject Programming Fundamentals, Introduction to Computing and Computer Graphics. Calculate the Total and Average. Each subject has a maximum of 100 marks.

Code in C:

```
#include <stdio.h>
int main() {
    int rollNo;
    float pf, ic, cg, total, average;
    scanf("%d", &rollNo);
    scanf("%f %f %f", &pf, &ic, &cg);
    total = pf + ic + cg;
    average = total / 3;
    printf("Roll No: %d\n", rollNo);
    printf("Total: %.2f\n", total);
    printf("Average: %.2f", average);
```

```
    return 0;
}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
    int rollNo;
    float pf, ic, cg, total, average;
    cin >> rollNo >> pf >> ic >> cg;
    total = pf + ic + cg;
    average = total / 3;
    cout << "Roll No: " << rollNo << endl;
    cout << "Total: " << total << endl;
    cout << "Average: " << average;
    return 0;
}
```

Code in JavaScript:

```
const prompt = require('prompt-sync')();
let rollNo = parseInt(prompt('Enter Roll No: '));
let pf = parseFloat(prompt('Enter Programming Fundamentals marks: '));
let ic = parseFloat(prompt('Enter Introduction to Computing marks: '));
let cg = parseFloat(prompt('Enter Computer Graphics marks: '));
let total = pf + ic + cg;
let average = total / 3;
console.log('Roll No:', rollNo);
console.log('Total:', total);
console.log('Average:', average);
```

Code in Python:

```
roll_no = int(input())
pf = float(input())
ic = float(input())
cg = float(input())
total = pf + ic + cg
```

```
average = total / 3

print("Roll No:", roll_no)

print("Total:", total)

print("Average:", average)
```

Program#8

Write a program to get temperature in Fahrenheit. Convert the temperature to Celsius degrees by using the formula.

$$C = 5/9(f - 32)$$

Code in C:

```
#include <stdio.h>

int main() {

    float f;

    scanf("%f", &f);

    float c = 5.0 / 9.0 * (f - 32);

    printf("Celsius = %.2f\n", c);

    return 0;

}
```

Code in C++:

```
#include <iostream>

using namespace std;

int main() {

    double f;

    cin >> f;

    double c = 5.0 / 9.0 * (f - 32);

    cout << "Celsius = " << c << endl;

    return 0;

}
```

Code in JavaScript:

```
const readline = require('readline');

const rl = readline.createInterface({ input: process.stdin, output: process.stdout });

rl.question('', input => {

  const f = Number(input);

  const c = 5 / 9 * (f - 32);
```

```
  console.log('Celsius =', c);
  rl.close();
});
```

Code in Python:

```
f = float(input())
c = 5 / 9 * (f - 32)
print("Celsius =", c)
```

Program#9

Write a program to find the maximum number from four numbers

Code in C:

```
#include <stdio.h>
int main() {
    int a, b, c, d, max;
    scanf("%d %d %d %d", &a, &b, &c, &d);
    max = a;
    if (b > max) max = b;
    if (c > max) max = c;
    if (d > max) max = d;
    printf("Maximum = %d\n", max);
    return 0;
}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
    int a, b, c, d;
    cin >> a >> b >> c >> d;
    int max = a;
    if (b > max) max = b;
    if (c > max) max = c;
    if (d > max) max = d;
    cout << "Maximum = " << max << endl;
    return 0;}
```

Code in JavaScript:

```
const readline = require('readline');
const rl = readline.createInterface({ input: process.stdin, output: process.stdout });
rl.question('', ans => {
  const nums = ans.trim().split(/\s+/).map(Number);
  console.log('Maximum =', Math.max(...nums));
  rl.close();
});
```

Code in python:

```
nums = list(map(int, input().split()))
print("Maximum =", max(nums))
```

Program#10

Write a program to convert 2.5 miles into kilometers and print the result on screen. (Hint: 1 mile = 1.609 kilometers)

Code in C:

```
#include <stdio.h>
int main() {
    float miles = 2.5;
    float km = miles * 1.609;
    printf("Kilometers = %.3f\n", km);
    return 0;
}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
    double miles = 2.5;
    double km = miles * 1.609;
    cout << "Kilometers = " << km << endl;
    return 0;
}
```

Code in JavaScript:

```
const miles = 2.5;
```

```
const km = miles * 1.609;

console.log('Kilometers =', km);
```

Code in Python:

```
miles = 2.5

km = miles * 1.609

print("Kilometers =", km)
```

Program#11

Declare and initialize two int variables, find average, print result

Code in C:

```
#include <stdio.h>
int main() {
    int a = 8, b = 12;
    float avg = (a + b) / 2.0;
    printf("Average = %.2f\n", avg);
    return 0;
}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
    int a = 8, b = 12;
    double avg = (a + b) / 2.0;
    cout << "Average = " << avg << endl;
    return 0;
}
```

Code in JavaScript:

```
const a = 8, b = 12;
const avg = (a + b) / 2;
console.log('Average =', avg);
```

Code in Python:

```
a, b = 8, 12
avg = (a + b) / 2
print("Average =", avg)
```

Program#12

Write a program to find the volume of a cylinder by using 'const' qualifier. The formula to find the volume of a cylinder is:

$$\text{Volume} = \pi R^2 \text{xH} \quad \text{The value of } \pi \; is \; 3.1417$$

Code in C:

```
#include <stdio.h>

int main() {

    const float pi = 3.1417;

    float r = 4, h = 10;

    float volume = pi * r * r * h;

    printf("Volume = %.3f\n", volume);

    return 0;

}
```

Code in C++:

```
#include <iostream>

using namespace std;

int main() {

    const double pi = 3.1417;

    double r = 4, h = 10;

    double volume = pi * r * r * h;

    cout << "Volume = " << volume << endl;

    return 0;

}
```

Program#13

Write a program using define directive to find the area of a circle. The formula to find the area of a circle is:

$$\text{Area} = \pi R^2 \quad \text{The value of } \pi \; is \; 3.1417$$

Code in C:

```
#include <stdio.h>

#define PI 3.1417

int main() {

    int r = 5;

    float area = PI * r * r;

    printf("Area = \n", area);

    return 0;}
```

Program#14

Write a program to convert millimeters into inches and print the result on screen. (Hint: 1 inch = 25.4 mm)

Code in C:

```
#include <stdio.h>
int main() {
    float mm = 50;
    float inches = mm / 25.4;
    printf("Inches = %.3f\n", inches);
    return 0;
}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
int millimeter= 50;
    float inches = millimeter / 25.4;
    cout << "Inches = " << inches << endl;
    return 0;
}
```

Program#15

Write a program to interchange values of two variables.

Code in C:

```
#include <stdio.h>
int main() {
    int a = 5, b = 10, t;
    t = a;
    a = b;
    b = t;
    printf("a = %d, b = %d\n", a, b);
    return 0;
}
```

Code in C++:

```
#include <iostream>

using namespace std;

int main() {

    int a = 5, b = 10, t;

    t = a;

    a = b;

    b = t;

    cout << "a = " << a << ", b = " << b << endl;

    return 0;

}
```

Program#16

Write a program to assign a value 3 to "int" type variables a, b and c using multiple assignment statement. Calculate the product of these numbers.

Code in C:

```
#include <stdio.h>
int main() {
    int a = 3, b = 3, c = 3;
    int product = a * b * c;
    printf("Product = %d\n", product);
    return 0;
}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
    int a = 3, b = 3, c = 3;
    int product = a * b * c;
    cout << "Product = " << product << endl;
    return 0;
}
```

Code in JavaScript:

```
const a = 3, b = 3, c = 3;
const product = a * b * c;
console.log('Product =', product);
```

Code in Python:

```
a = b = c = 3
```

```
print("Product =", a * b * c)
```

Program#17

Separate integral and fractional parts of 15.58971

Code in C:

```
#include <stdio.h>
int main() {
    double n = 15.58971;
    int i = (int)n;
    double f = n - i;
    printf("Integral = %d\nFractional = %.5f\n", i, f);
    return 0;
}
```

Code in C++:

```
#include <iostream>
using namespace std;
int main() {
    double n = 15.58971;
    int i = (int)n;
    double f = n - i;
    cout << "Integral = " << i << endl;
    cout << "Fractional = " << f << endl;
    return 0;
}
```

Code in JavaScript:

```
const n = 15.58971;
const i = Math.floor(n);
const f = n - i;
console.log('Integral =', i);
console.log('Fractional =', f);
```

Code in Python:

```
n = 15.58971

i = int(n)

f = n - i
print("Integral =", i)
print("Fractional =", f)
```

Program#18

Write a program to assign values to variables 'vi' and 't' an compute the value of 's' by using the formula:

$$S = vi * t + \frac{1}{2} at^2$$

Code in C:

```c
#include <stdio.h>
int main() {
    float vi = 10, t = 5;
    float s = vi * t;
    printf("s = %.2f\n", s);
    return 0;
}
```

Code in C++:

```cpp
#include <iostream>
using namespace std;
int main() {
    double vi = 10, t = 5;
    double s = vi * t;
    cout << "s = " << s << endl;
    return 0;
}
```

Code in JavaScript:

```javascript
const vi = 10, t = 5;
const s = vi * t;
console.log('s =', s);
```

Code in Python:

```python
vi, t = 10, 5
s = vi * t
print("s =", s)
```

Program#19

Write a program to assign your age in a variable and find the age in months and days.

Code in C:

```c
#include <stdio.h>
int main() {
    int years = 20;
    int months = years * 12;
    int days = years * 365;
    printf("Age in months = %d\nAge in days = %d\n", months, days);
    return 0;
}
```

Code in C++:

```cpp
#include <iostream>
using namespace std;
int main() {
    int years = 20;
    int months = years * 12;
    int days = years * 365;
    cout << "Age in months = " << months << endl;
    cout << "Age in days = " << days << endl;
    return 0;
}
```

Code in JavaScript:

```
const years = 20;
const months = years * 12;
const days = years * 365;
console.log('Age in months =', months);
console.log('Age in days =', days);
```

Code in Python

```
years = 20
months = years * 12
days = years * 365
print("Age in months =", months)
print("Age in days =", days)
```

Program#20

Write a program to print the output as given under by using escape sequence.

```
C:\Windows>

'P'	'A'	'K'

"Pakistan"
```

Code in C:

```
#include <stdio.h>
int main() {
    printf("C:\\Windows>\n'P'\t'A'\t'K'\n\"Pakistan\"\n");
    return 0;
}
```

Code in C++

```
#include <iostream>
using namespace std;
int main() {
    cout << "C:\\Windows>\n'P'\t'A'\t'K'\n\"Pakistan\"" << endl;
    return 0;
}
```

Code in JavaScript

```
console.log("C:\\Windows>");
console.log("'P'\t'A'\t'K'");
console.log("\"Pakistan\"");
```

Code in Python

```
print("C:\\Windows>")
print("'P'\t'A'\t'K'")
print("\"Pakistan\"")
```

Program#21

Write a program to print the output as shown below using '\n' escape sequence (without using loop and use one printf statement)

```
XXXXX

XXXX

XXX

XX

X
```

C

```
#include <stdio.h>
int main() {
   printf("XXXXX\nXXXX\nXXX\nXX\nX\n");
   return 0;
}
```

C++

```
#include <iostream>
using namespace std;
int main() {
   cout << "XXXXX\nXXXX\nXXX\nXX\nX\n";
   return 0;
}
```

JavaScript

```
console.log("XXXXX\nXXXX\nXXX\nXX\nX");
```

Python

```
print("XXXXX\nXXXX\nXXX\nXX\nX"）
```

Program#22

Write a program to input the name, age, height and gender of the student and prints the data of student on screen.

C

```
#include <stdio.h>
int main() {
   char name[50], gender[10];
   int age;
   float height;
   scanf("%s %d %f %s", name, &age, &height, gender);
```

```
    printf("Name: %s\nAge: %d\nHeight: %.2f\nGender: %s\n", name, age, height, gender);
    return 0;
}
```

C++

```
#include <iostream>
using namespace std;
int main() {
    string name, gender;
    int age;
    double height;
    cin >> name >> age >> height >> gender;
    cout << "Name: " << name << endl;
    cout << "Age: " << age << endl;
    cout << "Height: " << height << endl;
    cout << "Gender: " << gender << endl;
    return 0;
}
```

JavaScript

```
const readline = require('readline');
const rl = readline.createInterface({ input: process.stdin, output: process.stdout });
rl.question('', input => {
  const [name, age, height, gender] = input.trim().split(/\s+/);
  console.log('Name:', name);
  console.log('Age:', age);
  console.log('Height:', height);
  console.log('Gender:', gender);
  rl.close();
});
```

Python

```
name, age, height, gender = input().split()
print("Name:", name)
print("Age:", age)
print("Height:", height)
print("Gender:", gender)
```

Proagram#23

Input radius, find area and circumference

C

```
#include <stdio.h>
int main() {
    float r;
    scanf("%f", &r);
    float area = 3.1416 * r * r;
    float circum = 2 * 3.1416 * r;
    printf("Area = %.2f\nCircumference = %.2f\n", area, circum);
    return 0;
}
```

C++

```
#include <iostream>
using namespace std;
int main() {
    double r;
    cin >> r;
    double area = 3.1416 * r * r;
    double circum = 2 * 3.1416 * r;
    cout << "Area = " << area << endl;
    cout << "Circumference = " << circum << endl;
    return 0;
}
```

JavaScript

```
const readline = require('readline');
const rl = readline.createInterface({ input: process.stdin, output: process.stdout });
rl.question('', input => {
  const r = Number(input);
  const area = 3.1416 * r * r;
  const circum = 2 * 3.1416 * r;
  console.log('Area =', area);
  console.log('Circumference =', circum);
  rl.close();
});
```

Python

```
r = float(input())
area = 3.1416 * r * r
circum = 2 * 3.1416 * r
print("Area =", area)
print("Circumference =", circum)
```

Program#24

Input marks of 5 subjects, calculate total and average

C

```
#include <stdio.h>
int main() {
    float a, b, c, d, e;
    scanf("%f %f %f %f %f", &a, &b, &c, &d, &e);
    float total = a + b + c + d + e;
    float avg = total / 5;
    printf("Total = %.2f\nAverage = %.2f\n", total, avg);
    return 0;
}
```

C++

```
#include <iostream>
using namespace std;
int main() {
    double a, b, c, d, e;
    cin >> a >> b >> c >> d >> e;
    double total = a + b + c + d + e;
```

```
    double avg = total / 5;
    cout << "Total = " << total << endl;
    cout << "Average = " << avg << endl;
    return 0;
}
```

JavaScript

```
const readline = require('readline');
const rl = readline.createInterface({ input: process.stdin, output: process.stdout });
rl.question('', ans => {
  const m = ans.trim().split(/\s+/).map(Number);
  const total = m.reduce((a, b) => a + b, 0);
  const avg = total / 5;
  console.log('Total =', total);
  console.log('Average =', avg);
  rl.close();
});
```

Python

```
marks = list(map(float, input().split()))
total = sum(marks)
avg = total / 5
print("Total =", total)
print("Average =", avg)
```

Program#26.

Convert 12000 rupees into dollars (1 dollar = 60 rupees)

C

```
#include <stdio.h>
int main() {
    float rupees = 12000;
    float dollars = rupees / 60;
    printf("Dollars = %.2f\n", dollars);
    return 0;
}
```

C++

```
#include <iostream>
using namespace std;
int main() {
    double rupees = 12000;
    double dollars = rupees / 60;
    cout << "Dollars = " << dollars << endl;
    return 0;
}
```

Java

```
public class Problem26 {
    public static void main(String[] args) {
        double rupees = 12000;
```

```
        double dollars = rupees / 60;
        System.out.println("Dollars = " + dollars);
    }
}
```

JavaScript

```
const rupees = 12000;
const dollars = rupees / 60;
console.log('Dollars =', dollars);
```

Python

```
rupees = 12000
dollars = rupees / 60
print("Dollars =", dollars)
```

Program#27

Input time in hours, minutes, seconds; convert to seconds

C

```
#include <stdio.h>
int main() {
    int h, m, s;
    scanf("%d %d %d", &h, &m, &s);
    int total = h * 3600 + m * 60 + s;
    printf("Seconds = %d\n", total);
    return 0;
}
```

C++

```
#include <iostream>
using namespace std;
int main() {
    int h, m, s;
    cin >> h >> m >> s;
    int total = h * 3600 + m * 60 + s;
    cout << "Seconds = " << total << endl;
    return 0;
}
```

JavaScript

```
const readline = require('readline');
const rl = readline.createInterface({ input: process.stdin, output: process.stdout });
rl.question('', input => {
  const [h, m, s] = input.trim().split(/\s+/).map(Number);
  console.log('Seconds =', h * 3600 + m * 60 + s);
  rl.close();
});
```

Python

```
h, m, s = map(int, input().split())
print("Seconds =", h * 3600 + m * 60 + s)
```

Program#28

Compute disc = b^2 - 4ac

C

```
#include <stdio.h>
int main() {
    float a, b, c;
    scanf("%f %f %f", &a, &b, &c);
    float disc = b * b - 4 * a * c;
    printf("Disc = %.2f\n", disc);
    return 0;
}
```

C++

```
#include <iostream>
using namespace std;
int main() {
    double a, b, c;
    cin >> a >> b >> c;
    double disc = b * b - 4 * a * c;
    cout << "Disc = " << disc << endl;
    return 0;
}
```

JavaScript

```
const readline = require('readline');
const rl = readline.createInterface({ input: process.stdin, output: process.stdout });
rl.question('', ans => {
  const [a, b, c] = ans.trim().split(/\s+/).map(Number);
  console.log('Disc =', b * b - 4 * a * c);
  rl.close();
});
```

Python

```
a, b, c = map(float, input().split())
print("Disc =", b * b - 4 * a * c)
```

Program#29

Print message if n > 100

C

```
#include <stdio.h>
```

```
int main() {
    int n;
    scanf("%d", &n);
    if (n > 100) printf("Value is greater than 100\n");
    return 0;
}
```

C++

```
#include <iostream>
using namespace std;
int main() {
    int n;
    cin >> n;
    if (n > 100) cout << "Value is greater than 100" << endl;
    return 0;
}
```

JavaScript

```
const readline = require('readline');
const rl = readline.createInterface({ input: process.stdin, output: process.stdout });
rl.question('', input => {
  const n = Number(input);
  if (n > 100) console.log('Value is greater than 100');
  rl.close();
});
```

Python

```
n = int(input())
if n > 100:
    print("Value is greater than 100")
```

Program#30

Test whether integer is odd or even

C

```
#include <stdio.h>
int main() {
    int n;
    scanf("%d", &n);
    if (n % 2 == 0) printf("Even\n"); else printf("Odd\n");
    return 0;
}
```

C++

```
#include <iostream>
using namespace std;
int main() {
    int n;
    cin >> n;
    if (n % 2 == 0) cout << "Even" << endl; else cout << "Odd" << endl;
    return 0;}
```

JavaScript

```
const readline = require('readline');
const rl = readline.createInterface({ input: process.stdin, output: process.stdout });
rl.question('', input => {
  const n = Number(input);
  console.log(n % 2 === 0 ? 'Even' : 'Odd');
  rl.close();
});
```

Python

```
n = int(input())
print("Even" if n % 2 == 0 else "Odd")
```