

Total Marks: 100

Due Date: 18<sup>th</sup> Feb, 2017

# PROGRAMMING FUNDAMENTALS

## ASSIGNMENT # 1



**COURSE INSTRUCTOR: KHAWAJA UBAID UR REHMAN**

**Instuctions**

- All the questions are mandatory. Each question carry some parts.
- You can discuss the assignment with others but you cannot copy the code. Do the assignment yourself. Each student has to do the assignment individually.
- Read the question carefully before starting any question.
- Submit soft copy (a single zipped folder containing your C++ files) using the submission link available at Moodle.
- You have to submit the cpp files of your code of Question 1, 13, 14, 15 & 16 on the Moodle whereas you can do the remaining questions in microsoft word.
- The name of the zipped folder should be your Roll no. Name of your C++ file should be the question number e.g. question1.cpp etc.
- **Plagiarism i.e. Copy/Paste may cause F grade in the course.**
- **The due date of Assignment # 1 is 18<sup>th</sup> Feb, 2017 before 11: 55 pm**

**Question #1: Write a C++ program that prints the following shapes with asterisks using cout. (10 marks)**

a.



b.

```

C
O M
P U T
E R I S
A W O R L
D O F S
C I E
E
  
```

c.

```

- - - - -
- - - - -
- - - - -
  
```

```

-----
-----
d.  *      *
    *  *          *      *****      *
      *          **      *****      ***
    *  *          ***      ***      *****
    *      *      ****      **      *****
    *          *      *****      *      *****

```

e. Write a C++ program that prints your name with asterisks on the console.

**Question # 2:** Can you represent each of the following values using a data type? If you can which data type would you choose and why? If you cannot why not? (10 marks)

- 4
- 23.5
- '0'
- 7.8E-03
- '876'
- 2147483650
- '+'
- '8'
- 32.4789877689
- 'hello'

**Questions # 3:** Find errors in the following statements and correct them. (6 marks)

- long,population =1500;
- float average=90.15.
- int =35;
- float a b c
- char ch 'B'
- char c="ABC";

**Question # 4:** Calculate the value of n after each of the following C++ statements is executed.

(8 marks)

- int n=22/8;
- int n= 99/8+21/11\*7;
- double a=4,b=3,p=8,q=2;  
double n=q/a-p/b;
- int a=6,b=3,p=8,q=2;  
double n=p/a+q/b;
- int a=3.3,b=2.7,p=8.7,q=5.4;  
double n=p/b+q/a;

- f. `int n=11+7/4+98%6*3;`  
 g. `int n=11/31%8*5-12;`  
 h. `double p=8;`  
    `int q=5;`  
    `int n=q*p+3.0*p*p-(q%3)*p*p*p;`

**Question # 5: Which of the following assignment statements are invalid? If invalid, explain why?**

**(5 marks)**

- a. `3.14*r=area;`  
 b. `c=m/n-(z+n);`  
 c. `z=n*y+z(4.2n+y);`  
 d. `float=m/n;`  
 e. `y=5=z;`

**Question # 6: What is the output of the following expressions? (7 marks)**

- a. `cout<<(1+8/2+((1*4)+(5*4))/4);`  
 b. `cout<<((1+1+1+1)/2+(1+1+1)/3);`  
 c. `cout<<(5*5+5/5+6);`  
 d. `cout<<(((3+4)+(4*7))/5);`  
 e. `cout<<((3*6*7*2)+12/2);`  
 f. `cout<<5-3*4%(6-1);`  
 g. `cout<<(8*4*2+6)/2+4;`

**Question # 7: Suppose w,x,y and z are four float variables and a, b and c are three int variables. Each of the following statements contains one or more violations of rules for forming arithmetic expressions. Rewrite these statements so that it is consistent with rules. (5 marks)**

Invalid expression	Valid Expression
<code>z=4.0 w*y;</code>	
<code>y=yz;</code>	
<code>a=6b4;</code>	
<code>c=3(a+b);</code>	
<code>z=7w+xy;</code>	

**Question # 8: Convert the following expressions into C++ expressions. (10 marks)**

- a.  $x^2+3x-4$   
 b.  $(x+y)z$   
 c.  $x+3y/2x-y$   
 d.  $1/x^2+x+3$   
 e.  $x+y/7$   
 f.  $2bc^3$   
 g.  $x=\frac{3y}{5-z}$   
 h.  $z=area\sqrt{area}$

- i.  $res = \frac{3ijk+k^9}{7ik-5\sqrt{j}+k}$
- j.  $\frac{x+32}{y-32} - (x - 2y)$

**Question # 9: Compute the following arithmetic expressions: (3 marks)**

- a.  $(a+b/(c-5))/((d+7)/(e-37))\%3$
- b.  $a+b/c-5/d+7/e-37\%3$
- c.  $a*(b*b)-(c*b)+d$

**Question # 10: Which of the following is valid or invalid assignment expressions? (5 marks)**

- a.  $x=30;$
- b.  $a=9=3;$
- c.  $10=x;$
- d.  $x=y=10;$
- e.  $x\%=5;$

**Question # 11: Do the following expressions evaluate to true or false? (10 marks)**

- a.  $(3<4) \ || \ (3>4)$
- b.  $(3!=3) \ \&\& \ 4==4$
- c.  $(15>=15) \ \&\& \ (16==16) \ (14 \ || \ <2)$
- d.  $(6<=6) \ \&\& \ (5<3)$
- e.  $(6<=6) \ || \ (5<3)$
- f.  $(5!=6)$
- g.  $5<3 \ \&\& \ 6<=6 \ || \ 5!=6$
- h.  $(5<3) \ \&\& \ ((6<=6) \ || \ (5!=6))$
- i.  $!((5<3) \ \&\& \ ((6<=6) \ || \ (5!=6)))$
- j.  $!(12>25) \ \&\& \ !(18<17)$

**Question # 12: What is the output of the following code? (8 marks)**

- a. 

```
#include <iostream>

using namespace std;

main(){

int x=20, y=35

x=x++ + x++;

y=++x + ++x;

cout<<x<<y<<endl;

}
```
- b. 

```
#include <iostream>

Using namespace std;
```

```
main(){
int x=10,y=15;
x=x++;
y=++y;
cout<<x<<" "<<y<<endl;
}
```

**Question # 13:** Write a program in C++ that inputs a five digit number as input and reverse the number. (3 marks)

**Question # 14:** Write a C++ program that inputs an even and odd number through keyboard, multiplies even with 5 and odd with 3 and adds both results. It subtracts the result from 1000 and finally prints the difference. (2 marks)

**Question # 15:** Write a program that will prompt the user to enter the current rates of electricity, gas and petrol per unit. Give each item's rate an increment of 10%. Compute and display the new prices per unit of electricity, gas and petrol. (3 marks)

**Question # 16:** In a town, the percentage of men is 52. The percentage of total literacy is 48. If total percentage of literate men is 35 of the total population; write a program to find the total number of illiterate men and women if the population of town is 80,000. (5 marks)

-----The End-----

Hard Work brings prosperity;

Playing around brings poverty

If hard work is your weapon,

Success will be your slave

Programming is usually, learn by doing examples

