**Assignment # 3**

***Due Date: Friday April 26, 2019***

**Question 01 [35 Marks]: Mention the output of the following code. In case of syntax errors; mention the errors and also suggest the correction. *Rewrite the corrected lines only*.**

|  |  |
| --- | --- |
| 1. **main(){**   **int time = 10;**  **if(time=11)**  **cout<<”Time is 11 am”;**  **else**  **cout<<”Time is not 11 am”;**  **}** | **Correction (if any):** |
| **Output: Time is 11 am** | |

|  |  |
| --- | --- |
| 1. **switch (n)**   **{**  **case 1 : cout<<”The number is 1”<<endl;**  **case 2 : cout<<”The number is 2”; break ;**  **default : cout<<”The number is neither**  **1 nor 2” << break;**  **}** | **Correction (if any):** |
| **Output if n = 0: The number is neither 1 nor 2** | **Output if n = 1: The number is 1**  **The number is 2** |
| **Output if n = 2: The number is 2** | **Output if n = 3: The number is neither 1 nor 2** |

|  |  |
| --- | --- |
| 1. **double pi = 3.14159;**   **int radius = 3;**  **int Area = radius\*radius\*pi;**  **cout << “Area is: ”; Area;** | **Correction (if any):** |
| **Output: Area is:** | |

|  |  |
| --- | --- |
| 1. **main( )**   **{**  **int a = 300, b, c;**  **if ( a >= 400)**  **b = 300;**  **c = 200;**  **cout<<b<<c;**  **}** | **Correction (if any):** |
| **Output:** (Garbage value of b)200 | |

|  |  |
| --- | --- |
| 1. **main ( )**   **{**  **int k, num = 30;**  **k=(num>5?(num<=10?100:200):500);**  **cout<<k;**  **}** | **Correction (if any):** |
| **Output:** 200 | |

|  |  |
| --- | --- |
| 1. **main ( )**   **{**  **int a=0, b=0;**  **for ( int i=0; i<5; i++)**  **a = a+i\*I ;**  **b = b+a;**  **cout<<”The value of b is: ”**  **<<b;**  **}** | **Correction (if any):**  **a = a+i\*i ;** |
| **Output: The value of b is:30** | |
| 1. **Examine the code below. What (not how) does the following function do?**   **int mystery(int x, int y, int z) {**  **int temp;**  **temp = x;**  **if (y > temp) { temp = y; }**  **if (z > temp) { temp = z; }**  **return temp;**  **}** | **Answer:**  This function finds and return the greatest of the three numbers. |

|  |  |
| --- | --- |
| 1. **int func1 ( void )**   **{**  **cout<<“ \n Inside Function 1”);**  **int func2 ( void )**  **{**  **cout<< “ \n Inside Function 2 “);**  **}**  **}**  **int main()**  **{**  **func2();**  **func1();**  **return 0;**  **}** | **Correction (if any):**  int func1 ( void )  {  cout<<" \n Inside Function 1";  }  int func2 ( void )  {  cout<< " \n Inside Function 2 ";  }  int main()  {  func2();  func1();  return 0;  } |
| **Output:**  **Inside Function 2**  **Inside Function 1** | |

|  |  |
| --- | --- |
| 1. **int A = 10;**   **float functionB( int A, float C )**  **{**  **int A = 5;**  **return ::A + B + C;**  **}**  **int main()**  **{**  **int A = 2;**  **float X = 11.1;**  **cout << functionB( A, X );**  **}** | **Correction (if any):**  **A = 5;**  **return ::A + C;** |
| **Output:** 21.1 | |
| 1. **int main()**   **{**  **static int A = 2;**  **cout<< a ;**  **if(A <=5)**  **main();**  **else**  **return 0;**  **}** | **Correction (if any):**  **cout<< A ;** |
| **Output:** 2222222………… | |

**Question 2 [5 Marks]: Write the output of each statement in the given blank.**

int func() {

static int n = 2;

return ++n;

}

int main() {

int n = 4, k = 2;

cout << ++n << endl; \_\_\_\_5\_\_\_\_

cout << n << endl; \_\_\_\_5\_\_\_\_

cout << n++ << endl; \_\_\_\_5\_\_\_\_

cout << func()<<endl; \_\_\_\_3\_\_\_\_

cout << ++n + k << endl; \_\_\_\_9\_\_\_\_

cout << n++ + k << endl; \_\_\_\_9\_\_\_\_

cout << k << endl; \_\_\_\_2\_\_\_\_

cout << " " << n << endl; \_\_\_\_\_8\_\_\_

cout << " n \* n = "; \_\_\_\_\_\_n\*n =\_\_

cout << n \* n << endl; \_\_\_\_64\_\_\_\_

cout << func()<<endl; \_\_\_\_4\_\_\_\_

cout << 'n' << endl; \_\_\_\_n\_\_\_\_

return 0;

}

**Question 3 [4 Marks] [CLO2, Cog-3:** **Application]: Write a recursive function to print fibonacci series.**

|  |
| --- |
| Void fibonacci()  {  static int a=0,b=0;  if (!a)  cout<<a<<b;  int c=a+b;  cout<<c;  a=b;  b=c;  fibonacci();  } |

**Question 4 [10 Marks] [CLO2, Cog-3: Application]: Write a program to swap two integers and floats using function overloading.**

|  |
| --- |
| #include <iostream>  int main ()  {  int a=5,b=8;  float c=9.3,d=5.4;  Swap(c,d);  Swap(a,b);  }  using namespace std;  void Swap(int &a, int &b)  {  a=a+b;  b=a-b;  a=a-b;  }  void Swap(float &a, float &b)  {  a=a+b;  b=a-b;  a=a-b;  } |

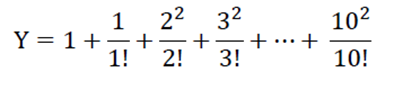
**Question 5 [5 Marks]: Write a** *while* **loop that prints the given sequence of values. The cout statement should print only one value at a time. The sequence is -3, 6,- 9, 12,- 15, 18,- 21,…….., -99.**

|  |
| --- |
| **#include <iostream>**  **using namespace std;**  **int main ()**  **{**  **int num=3,sign,i=1;**  **while(num<=99)**  **{**  **if(i%2==0)**  **sign=1;**  **else**  **sign=-1;**  **cout<<sign\*num<<",";**  **num+=3;**  **i++;**  **}**  **}** |

**Question 6 [10 Marks]: Write a C++ program to calculate the number of bits that are unset (Zero) in an integer entered by user.**

|  |
| --- |
| #include <iostream>  using namespace std;  int main()  {  int total=32,bits=0,num;  cout<<"Enter a number: ";  cin>>num;  while(num!=0)  {  int rem=num&1;  if(rem)  bits++;  num=num>>1;  }  cout<<"This number has "<<total-bits<<" unset bits.";  return 0;  } |

**Question 7 [10 Marks]: Write a program to find sum as Y of the following series excluding multiples of 3 in the series:**

****

#include <iostream>

using namespace std;

int main()

{

float Y=0;

for(int i=1;i<=10;i++)

{

if (i%3!=0)

{

float sq=i\*i;

float fact=1;

for(int a=1;a<=i;a++)

{

fact=fact\*a;

}

float exp=sq/fact;

Y=Y+exp;

}

}

cout<<Y;

return 0;

}

**Question 8 [20 Marks]:** Write an entire C++ program that reads a positive integer entered by an interactive user and then prints out all the positive divisors of that integer in a column in decreasing order. The program should allow the user to repeat this process as many times as the user likes. Initially, the program should inform the user about how the program will behave. Then the program should prompt the user for each integer that the user wishes to enter.

The program may be terminated in any of two ways. One way is to have the program halt if the user enters an integer that's negative or zero. In this case the user should be reminded with each prompt that the program can be terminated in that way. Alternatively, after an integer has been entered and the divisors have been printed, the program can ask the user whether he/she wishes to enter another integer. In this case, when the user accidentally enters a zero or negative integer to have its divisors calculated, the program should inform the user that the input is unacceptable and should allow the user to try again (and again!).

Here is an illustration of how the program and the interactive user might interact. The user's responses to the program are shown in bold italics.

This program is designed to exhibit the positive divisors of positive integers supplied by you. The program will repeatedly prompt you to enter a positive integer. Each time you enter a positive integer, the program will print all the divisors of your integer in a column and in decreasing order.

Please enter a positive integer: ***36***

36

18

12

9

6

4

3

2

1

Would you like to see the divisors of another integer (Y/N)? ***y***

Please enter a positive integer: ***-44***

-44 is not a positive integer.

Please enter a positive integer: ***0***

0 is not a positive integer.

Please enter a positive integer: ***109***

109

1

Would you like to see the divisors of another integer (Y/N)? ***m***

Please respond with Y (or y) for yes and N (or n) for no.

20

Would you like to see the divisors of another integer (Y/N)? ***n***

#include <iostream>

using namespace std;

int main ()

{

cout<<"This program is designed to exhibit the positive divisors of positive "<<endl;

cout<<"integers supplied by you. The program will repeatedly prompt you to enter a "<<endl;

cout<<"positive integer. Each time you enter a positive integer, the program will "<<endl;

cout<<"print all the divisors of your integer in a column and in decreasing order."<<endl;

char ch='y';

int num;

do

{

cout<<"Please enter a positive integer: ";

cin>>num;

if(num<=0)

cout<<num<<" is not a positive number.\n";

else

{

for(int i=num;i>0;i--)

{

if (num%i==0)

cout<<i<<endl;

}

do

{

cout<<"Would you like to see the divisors of another integer (Y/N)? ";

cin>>ch;

if(ch!='y'&& ch!='Y'&& ch!='n'&& ch!='N')

cout<<"Please respond with Y (or y) for yes and N (or n) for no.\n";

}while(ch!='y'&& ch!='Y'&& ch!='n'&& ch!='N');

}

}while(ch!='n' && ch!='N');

}