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Semester: BSE-1

Section: A

Reg. No: 202- BSE-032

Course: Programming Fundamentals

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Lab 9 and LAB 10

Sample Problem 1:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
void print();              // function declaration
void print()               // function definition
{
cout<<"I am in function"<<endl;
}
int _tmain(int argc, _TCHAR* argv[])
{
print();
system("pause");
return 0;
}
```

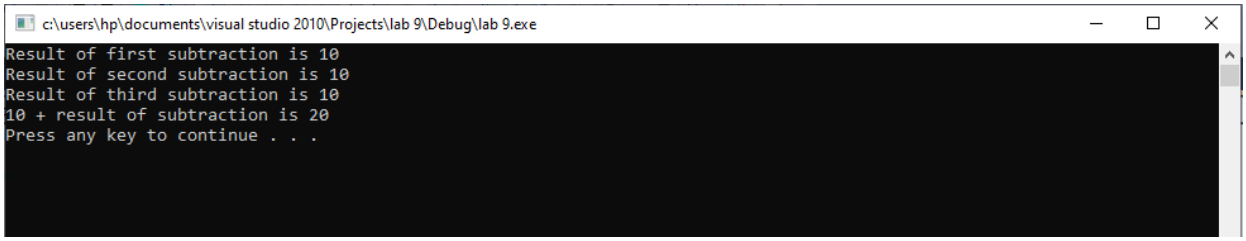
Sample Problem 2:

```
#include    "stdafx.h"
#include<iostream>
using       namespace
std;
int sum(int,int); // function declaration
int sum(int x,int y)         // function definition
{
return x+y;
}
int _tmain(int argc, _TCHAR* argv[])
{
int a=10;
int
b=20;
int z;
z= sum(a,b);      //function
calling cout<<z<<endl;
system("pause");
return 0;
}
```

Sample Problem 3:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
int sub(int x,int y)
{
int z;
z=x-y;
return
z;
}
int _tmain(int argc, _TCHAR* argv[])
{
int a=20,b=10,c=5,d,e,f;
d=sub(a,b);
cout<<"Result of first subtraction is
"<<d<<endl; e=sub(20,10);
cout<<"Result of second subtraction is "<<e<<endl;
cout<<"Result of third subtraction is
"<<sub(20,10)<<endl; f=10+sub(a,10);
cout<<"10 + result of subtraction is "
<<f<<endl; system("pause");
```

return 0;
}



Give answers to the following.

1.	Write the declartion of a function named: power, to compute x^n. **int power(int x,int n);**
2.	Call the function: int factorial(int) ; **factorial(n);**

3.	Which of these are valid function declarations: **a.** void function(); **Valid** **b.** void function(void); **Valid** **c.** void function(int); **Valid** **d.** function(int); **Not Valid** **e.** int function(); **Valid**

Task 2 :

Write the output of the following code fragments.

1.	int square(int);
	int main()
	{

```
        for(int i=0;i<10;i+=2)
                cout << square(i) << endl;

         return 0;
}
int square(int a)
{
        return a*a;
}
```

Output:

0
4
16
36
64

2.

```
int minimum(int,int);
int main()
{
        int x=10,y=5;
        int m = minimum(x,y);
        cout<<m<<endl;
 return 0;
}
int minimum(int a,int b)
{
        if (a<b)
                return a;
        else
                return b;
}
```

Output:

5

3.

```
void increment(int);
int main()
{

        int x=10;
        cout<< x <<endl;
        increment(x);
        cout<< x <<endl;
        return 0;
}
void increment(int x)
{
        x++;
        cout<< x <<endl;
```

```
}
```

Output:

10

11

10

Task#3

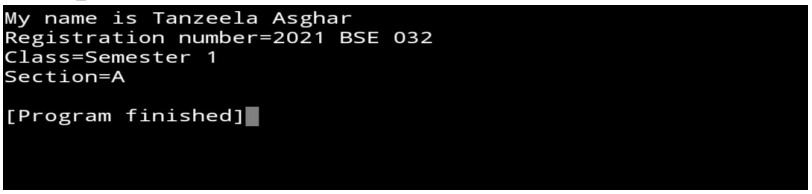
Create a function which display your Name , Reg no, Class, Section. Display all the things within the body of function, call the function in main

Code:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
void display()
{
	cout<<"My name is Tanzeela Asghar"<<endl;
	cout<<"Registration number=2021 BSE 032"<<endl;
	cout<<"Class=Semester 1"<<endl;
	cout<<"Section=A"<<endl;
}

int _tmain(int argc, _TCHAR* argv[])
{
	display();
	system("pause");
	return 0;
}
```

Output:



Task#4

Create a function SUM in C++ which calculates and return the sum of 5 numbers entered by user.

Code:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
int sum(int a,int b,int c,int d,int e);

int _tmain(int argc, _TCHAR* argv[])
{
	int a,b,c,d,e;
	cout<<"Enter 1 number:";
```

```
	cin>>a;
	cout<<"Enter 2 number:";
	cin>>b;
	cout<<"Enter 3 number:";
	cin>>c;
	cout<<"Enter 4 number:";
	cin>>d;
	cout<<"Enter 5 number:";
	cin>>e;

	cout<<"sum="<<sum(a,b,c,d,e)<<endl;
	system("pause");
	return 0;
}
int sum(int a,int b,int c,int d,int e)
{
	int s=0;
	s=a+b+c+d+e;
	return s;
}
```

OUTPUT:

TASK#5

Create a function is_even which take a number as argument, return TRUE if number is even. Take number from user at run time

Code:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
bool iseven(int num);

int _tmain(int argc, _TCHAR* argv[])
{
	int num;
	cout<<"Enter
	number="; cin>>num;
	cout<<"Even="<<iseven( num)<<endl;
	system("pause"); return 0;
}
bool iseven(int num)
{
```

```
	int even;
	if (num%2==0)
		even=true;
	else
		even=false;
	return even;
}
```

OUTPUT

LAB#10

TASK#1

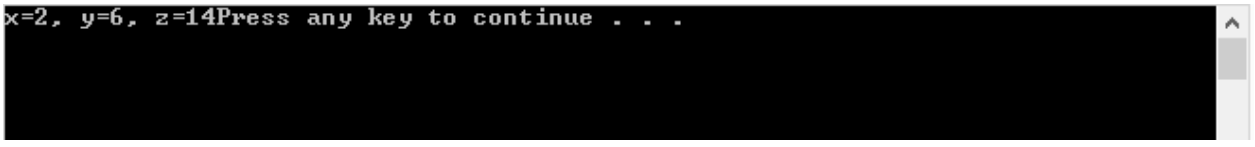
Compile all sample programs

Sample #01:

CODE:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
void duplicate (int& a, int& b, int& c)
{
	a=a*2;
	b=b*2
	;
	c=c*2;
}
int _tmain(int argc, _TCHAR* argv[])
{
	int x=1, y=3, z=7;
	duplicate (x, y, z);
	cout << "x=" << x << ", y=" << y << ", z=" << z;
	system("pause");
	return 0;
}
```

OUTPUT:



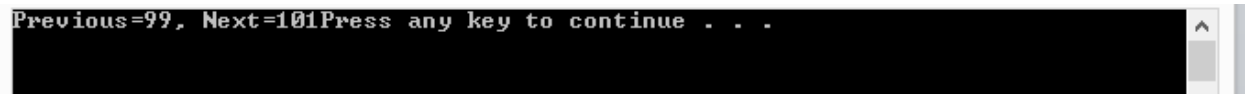
Sample #02:

CODE:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
void prevnext (int x, int& prev, int& next)
{
        prev = x-1;
        next = x+1;
}
int _tmain(int argc, _TCHAR* argv[])
{
        int x=100, y, z;
        prevnext (x, y, z);
        cout << "Previous=" << y << ", Next=" <<
 z; system("pause");
 return 0;

}
```

OUTPUT:

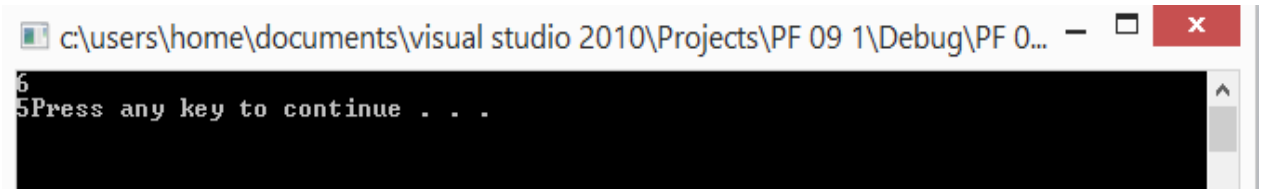


Sample #03:

CODE:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
int divide (int a, int b=2)
{
        int r;
        r=a/b;
        return r;
}
 int _tmain(int argc, _TCHAR* argv[])
 {
        cout << divide
        (12); cout << endl;
        cout << divide
        (20,4);
        system("pause");
        return 0;
 }
```

OUTPUT:



Sample #04:

CODE:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
int operate (int a, int
b)
{
        return a*b;
}

float operate (float a, float b)
{
        return a/b;
}
int _tmain(int argc, _TCHAR* argv[])
{
 int x=5,y=2;
 float n=5.0,m=2.0;
 cout << operate (x,y);
 cout << "\n";
 cout << operate (n,m);
 cout << "\n";
 system("pause");
 return 0;
}
```

OUTPUT:

Sample program #05:

CODE:

```
#include "stdafx.h"
#include<iostream>
```

```
using namespace std;
int fact (int a)
{
        if
        (a==0)
        return  1;
        else
        return a*fact(a-1);
}
int _tmain(int argc, _TCHAR* argv[])
{
        int n;
        cout << "Please type a number:
        "; cin >> n;
        cout << n << "! = " << fact
        (n)<<endl; system("pause");
        return 0;
}
```

OUTPUT:

TASK#2

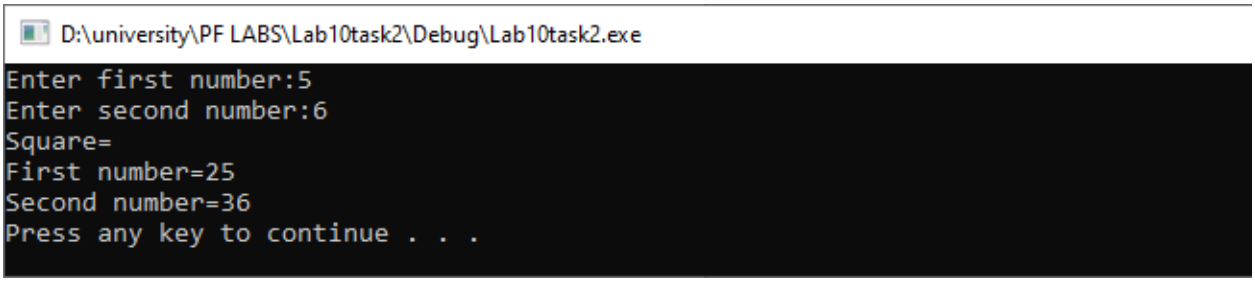
Create a program with a function which calculate the square of both the values entered by user. (Using call be reference)

CODE:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
void square(int &a,int &b);
int _tmain(int argc, _TCHAR* argv[])
{
        int a,b;
        cout<<"Enter first number:";
        cin>>a;
        cout<<"Enter second
        number:"; cin>>b;
        square(a,b);
        cout<<"Square="<<endl;
        cout<<"First number="<<a<<endl;
        cout<<"Second number="<<b<<endl;;
```

```
	system("pause");
	return 0;
}
void square(int &a,int &b)
{
	a=a*a;
	b=b*b;
}
```

OUTPUT



TASK#3

Write a program with a function volume( ) to calculate the volume of a cube. Use Function Overloading concept.

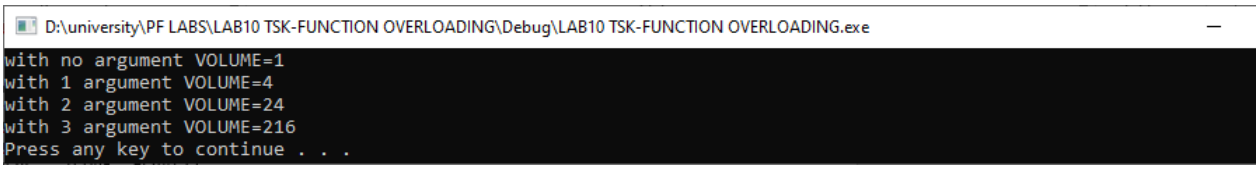
CODE:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
int volume();
int volume(int a);
int volume(int a,int b);
int volume(int a,int b,int c);
int _tmain(int argc, _TCHAR* argv[])
{
	int a=4,b=6,c=9;
	cout<<"with no argument VOLUME="<<volume()<<endl;
	cout<<"with 1 argument VOLUME="<<volume(a)<<endl;
	cout<<"with 2 argument VOLUME="<<volume(a, b)<<endl;
	cout<<"with 3 argument
	VOLUME="<<volume(a,b,c)<<endl;
	system("pause"); return 0;
}
int volume()
{
	return(1*1*1);
}
int volume(int a)
{
```

```
	return(a*1*1);
}
int volume(int a,int b)
{
	return(a*b*1);
}

int volume(int a,int b,int c)
{
	return(a*b*c);
}
```

OUTPUT



TASK#4

Perform Task # 03 by using Default value concept call the function with 0,1, 2 and 3 Arguments

CODE:

```
#include "stdafx.h"
#include<iostream>
using namespace std;

int volume(int a=1,int b=1,int c=1)
{
	return(a*b*c);
}

int _tmain(int argc, _TCHAR* argv[])
{
	int a=4,b=6,c=9;
	cout<<"with no default value, VOLUME="<<volume()<<endl; cout<<"with 1 default
	value, VOLUME="<<volume(a)<<endl; cout<<"with 2 no default value,
	VOLUME="<<volume(a, b)<<endl; cout<<"with 3 no default value,
	VOLUME="<<volume(a,b,c)<<endl; system("pause");
	return 0;
}
```

OUTPUT

TASK#5

Create a program with a function which calculate the power of a number, both number and power should be entered by user at run time. (Note : Use Recursion for this program)

CODE:

```
#include "stdafx.h"
#include<iostream>
using namespace std;
int power(int base,int powerraised);
int _tmain(int argc, _TCHAR* argv[])
{
	int base,power_raised;
	cout<<"Enter base
	number:"; cin>>base;
	cout<<"Enter power number:";
	cin>>power_raised;

	cout<<"Power Answer="<<power(base,
	power_raised)<<endl; system("pause");
	return 0;
}
int power(int base,int powerraised)
{
	if(powerraised!=0)
		return (base*power(base, powerraised-1));
		else

}
return 1;
```

Output

```
Enter base number:0
Enter power number:1
Power Answer=0
Press any key to continue . . .
```