OOP Lab

Assignment - II

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CSE

Q.1 Write a program to find the fundamental data types in C++ languages.

```
#include <iostream>
using namespace std;

int main() {
  cout << "The fundamental datatype size in C++ is" << endl;
cout << "char size is: " << sizeof(char) << " bytes" << endl;
cout << "int size is: " << sizeof(int) << " bytes" << endl;
cout << "long size is: " << sizeof(long) << " bytes" << endl;
cout << "float size is: " << sizeof(float) << " bytes" << endl;

return 0;

}
```

Output:

```
The size of char is: 1 bytes
The size of int is: 4 bytes
The size of long is: 4 bytes
The size of float is: 4 bytes
```

Q.2 Write a program to check whether a number is prime or not

```
#include <iostream>
using namespace std;
int main() {
 int n, i, flag=0;
 cout << "Enter a positive integer: " << endl;
 cin >> n;
 if (n==0 && n==1)
    flag= 0;
for (i=2; i<=n/2; ++i) {
   if (n%i==0) {
      flag=1;
      break;
   }
}
```

```
if (flag == 0)
 cout << "It is a prime number." << endl;
 else
 cout << "It is not a prime number." << endl;

return 0;
}
```

Output:

```
Enter a positive integer:
7
It is a prime number
```

Q.3 Write a program to demonstrate the concept of call-by-value, call-by-reference, call-by-address by taking swapping of two nos as an example.

```
#include <iostream>
using namespace std;
void cbvalue(int x, int y)
{
    int temp;
    temp = x;
    x = y;
    y = temp;
}
void cbref(int &x, int &y) {
   int temp;
    temp = x;
   x = y;
    y = temp;
}
```

```
void cbadd (int *x, int *y) {
    int temp;
    temp = x;
    *x = *y;
    *y = temp;
}

int main() {
    int a, b;
    cout << "Enter the First Number: " << endl;
    cin >> a;
    cout << "Enter the second Number: " << endl;
    cin >> b;

cbvalue (a, b);
    cout << "Numbers after swapping: " << a << " " << b << "\n";
cbref (a, b);
cout << "Numbers after swapping: " << a << " " << b << "\n";
cbadd (&a, &b);
cout << "Numbers after swapping: " << a << " " << b << "\n";
}
```

Output:

```
Enter First Number:
3
Enter second Number:
4
Numbers after swapping: 3 4
Numbers after swapping: 4 3
Numbers after swapping: 3 4
```

Q.4 write a program to find out the area of a circle and volume of a sphere by using function overloading concept (use 1 function AREA-VOL)

```
#include<iostream>
using namespace std;
int AREA_VOL(int r){
    float ar = 3.1415 * r * r;
    return ar;
  }
float AREA_VOL(float r){
    float vol = 3.1415 * 1.33 * r * r * r;
    return vol;
 }
int main()
{
 int rad;
 float rad1;
 cout<<"Enter radius of circle= "<<endl;
 cin >> rad;
 cout<<"Enter radius of sphere = "<<endl;
 cin >> rad1;
 cout<<"Area of circle = "<<AREA_VOL(rad)<<"/n";
cout<<"Volume of sphere= "<<AREA_VOL(rad1)<<"/n";
return 0;
}
```

Output:

```
Enter radius of circle = 7
Enter radius of sphere = 7.00
Area of circle = 153
Area of Volume of sphere = 1433.12
```

Q.5 Write a program to find out area or volume of a shape/object using 1 func FUN-AREA only. If function 1 arg - area of circle, 2 arg - area of rect, 3 arg - volume of box, no arg - NULL

```
#include <iostream>
using namespace std;
float FUN_AREA (int a, int b) {
        int ar = a * b;
        return ar;
      }
int FUN-AREA (int a) {
    float ar = 3.1415 * a * a;
     return ar;
   }
int FUN-AREA (int a, int b, int c) {
     int vol = a * b * c;
      return vol;
    }
void FUN-AREA () {
    cout << "No input" << endl;
    }
int main ()
{ int x, y, z;
cout << "Enter radius of circle = ";
 cin >> x;
cout << "Enter the 2 sides of rect = ";
 cin >> x >> y;
cout << "Enter 3 sides of box = ";
cin >> x >> y >> y;
cout << "Area of circle = " << FUN-AREA (x) << "\n";
cout << "Area of rectangle = " << FUN-AREA (x, y) << "\n";
cout << "Volume of box = " << FUN-AREA (x, y, z);
return 0; }
```

Output:

```
Enter radius of circle = 3
Enter 2 sides of rectangle = 3 4
Enter 3 sides of box = 3 4 5
Area of circle = 28.2735
Area of rectangle = 12
Volume of box = 60
```

Q.6 Sum using default argument concept

```
#include <iostream>
using namespace std;
int sum (int a, int b = 10, int c = 20)
  { int ans = a+b+c;
      return ans;
  }
int main()
{ cout << "enter atmost 3 numbers" << endl;
  int x, y, z;
   cin >> x >> y >> z;
   if (x == 0 && y == 0 && z == 0)
      cout << "no input";
else if (y == 0 && x == 0)
      cout << sum(x);
else if (z == 0)
      cout << sum (x, y);
   else cout << sum( x, y, z);
      return 0;

  }
```

Output:

```
Enter atmost 3 numbers
   2 4 0
 26
```