Assignment No 1

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Course: OOP lab

Program: BCS

Q No.1: Write a C++ program to find leap year using if else statement.

Code:

```
#include<iostream>
using namespace std;
int main(){
	int year;
	cout<<"Enter a year "<<endl;
	cin>>year;
	if((year%400==0) || (year%4==0) && (year%100!=0)){
		cout<<year<<"  year is a leap year";
	}
	else{
		cout<<"year is not a leap year";
	}


	return 0;
}
```

Q No.2: Write a C++ program using switch statement which get month number from user and display month name accordingly.

Code:

```
#include<iostream>
using namespace std;
int main(){
	int month;
	cout<<"enter a month number ";
	cin>>month;
	switch (month){
	case 1:
		cout<<"January"<<endl;
		 break;
	case 2:
		cout<<"Febuary"<<endl;
		break;
	case 3:
		cout<<"March"<<endl;
		break;
	case 4:
		cout<<"April"<<endl;
		break;
	case 5:
		cout<<"May"<<endl;
```

```
            break;
        case 6:
            cout<<"June"<<endl;
            break;
        case 7:
            cout<<"July"<<endl;
            break;
        case 8:
            cout<<"August"<<endl;
            break;
        case 9:
            cout<<"September"<<endl;
            break;
        case 10:
            cout<<"October"<<endl;
            break;
    case 11:
            cout<<"November"<<endl;
            break;
        case 12:
            cout<<"December"<<endl;
            break;
        default:
            cout<<"invalid input";
```

```
                break;
                }
        return 0;
}
```

Q No.3: Write a C++ program that will create 2D array using random numbers and then show these values.

Code:

```
#include<iostream>
#include<stdlib.h>
#include<time.h>
using namespace std;
int main(){
	srand(time(0));
	int arr[2][2];
	cout<<"creating random 2D array"<<endl;
	for(int i=0;i<2;i++){
		for(int j=0;j<2;j++){
			arr[i][j]=rand();
		}
	}
	cout<<"Displaying random number array "<<endl;
	for(int i=0;i<2;i++){
		for(int j=0;j<2;j++){
			cout<<arr[i][j]<<"  ";
		}
		cout<<endl;
	}
	return 0;    }
```

Q No.4: Write user defined function namely arrayFunction() in C++ which will initialize array by taking values from user at run time and then call this function in main function which will return this array from the calling function to the called function (to the main function) and then show all items of this array in main function using both for loop.

Code:

```
#include<iostream>

using namespace std;

int * arrayFunction(int a){

        int* array=new int[a];

         for(int i=0;i<a;i++){

                cout<<"enter a number "<<endl;

                cin>>array[i];  }

         return array; }

int main(){

        int x;

        cout<<"enter the size of an array ";

        cin>>x;

  int * b=arrayFunction(x);

  cout<<"Displaying array "<<endl;

  for(int i=0;i<x;i++){

                cout<<*b<<endl;

                b++; }

   cout<<endl;

        return 0;

}
```

Q No.5: Game of Random Number

Code:

```
#include<iostream>
#include<stdlib.h>
#include<time.h>
using namespace std;
int main(){
        cout<<"Game of a random number "<<endl;
        int count=0;
        srand(time(0));
        int random_num;
        random_num=0 + (rand() % 101);
   cout<<" A random number is generated, try to guess it. "<<endl;
   int num;
   while(random_num!=num){
        cout<<"enter a number to guess from 0 to 100 "<<endl;
        cin>>num;
        if(num>random_num){
                cout<<"Your number is high, please try again "<<endl;
                }
                else if(num<random_num){
                cout<<"Your number is low, please try again "<<endl;
                }
                count+=1;
```

```
                if(random_num==num){
         cout<<"You found random number in "<<count<<" count
attempts."<<endl;
                }
        }
        if (count<=5){
           cout<<"Excellent ";
        }
        else{
           cout<<"Good ";
        }
        return 0;
}
```

Q No.6: Write a program to find out the length of string by using pointers?

Code:

```
#include<iostream>
using namespace std;
int main(){
   int count=0;
        char  str[100];
        cout<<"enter a string ";
        cin>>str;
        char*ptr= str;


    while(*ptr != '\0'){
           count+=1;
           ptr++;
        }
        cout<<"Length of a string = "<<count;


        return 0;
}
```

Q No.7: Create a structure called Volume that uses three variables of type Distance to model the volume of a room. Initialize a variable of type Volume to specific dimensions, then calculate the volume it represents, and print out the result. To calculate the volume, convert each dimension from a Distance variable to a variable of type float representing feet and fractions of a foot, and then multiply the resulting three numbers.

Code:

```
#include<iostream>

using namespace std;

struct Distance{

        float feet;

        float inches;

};

struct Volume{

        Distance length;

        Distance height;

        Distance width;


};

int main(){

        Volume room;

        cout<<"enter value of feet and inches  for length"<<endl;

        cin>>room.length.feet>>room.length.inches;

        cout<<"enter value of feet and inches  for height"<<endl;

        cin>>room.height.feet>>room.height.inches;

        cout<<"enter value of feet and inches  for width"<<endl;
```

```
        cin>>room.width.feet>>room.width.inches;
        float l,h,w,volume;
         l=room.length.feet+room.length.inches/12;
         h=room.height.feet+room.height.inches/12;
         w=room.width.feet+room.width.inches/12;
    volume=l*h*w;
   cout<<"Volume of room is "<<volume;
        return 0;
}
```

Q No.8: Define a class batsman with the following specifications:

Code:

```
#include<iostream>
using namespace std;
class batsman{
private:
        int bcode;
   char bname[20];
   int innings;
        int  not_out;
        int runs;
   int batavg;
        int calcavg(){
                if(innings!=not_out){
                        batavg =runs/(innings-not_out);
                        return batavg;
                }
                else {
                        return batavg=0;
                }
  }

public:
```

```
  void read_data(){
            cout<<" Enter bcode ";
            cin>>bcode;

            cout<<" Enter bname ";
            cin>>bname;

            cout<<" Enter innings ";
            cin>>innings;

            cout<<" Enter not_out ";
            cin>>not_out;

             cout<<" Enter runs ";
            cin>>runs;



            calcavg();  }

void display_data(){
        cout<<" bcode : "<<bcode<<"\n bname : "<<bname<<"\n innings :
"<<innings
        <<"\n not_out : "<<not_out<<"\n runs : "<<runs<<"\n batavg : "<<batavg;
}
```

```
};
int main(){
	batsman b1;
	b1.read_data();
	b1.display_data();

	return 0;
}
```