

Assignment #1

Name: Sheryar Sher

RollNo: 21P-8027

Section: BS-CS

Q1:

Code:

```
#include <iostream>
```

```
using namespace std;
```

```
int main(){
```

```
    int year; //deining an integer
```

```
    cout<<"Enter the year you wanna check: "; cin>>year; //geting input from user
```

```
    if (year % 400 == 0 and year % 100 == 0 ){ //checking condition for leap year
```

```
        cout <<year<<" is a leap year"<<endl;
```

```
    }
```

```
    else if (year % 4 == 0 and year % 100 != 0){
```

```
        cout <<year<<" is a leap year"<<endl; //print the messagge
```

```
    }
```

```
    else {
```

```
        cout <<year<<" is not a leap year"<<endl;
```

```
    }
```

```
}
```

Q2:

Code:

```
#include <iostream>
```

```
using namespace std;
```

```
int main(){
```

```
    int number; //defining an integer
```

```
    cout<<"Enter the month number: "; cin>>number; //geting input from user
```

```
    //using switch to show months name accordinly
```

```
    switch(number){
```

```
        case 1:
```

```
            cout<<"January"<<endl;
```

```
            break; //break to prevent from running all cases
```

```
        case 2:
```

```
            cout<<"Fabuary"<<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: //if user enter number that is not a case
            cout<<"Enter number B/W 1-12 only" <<endl;
    }
}

```

}

Q3:

Code:

```

#include <iostream>
#include <stdlib.h>
#include <time.h>
using namespace std;

```

```

int main (){

```

```

//add srand to no repeat the same random number
srand(time(NULL));

int finalArr[2][6]; //defining an arr

//running a loop and appending random number in the arr
for (int i = 0; i < 2; i++){
    for(int j = 0; j < 6; j++){
        finalArr[i][j] = rand() %100 +1; //appending random numbers
    }
}

//printing the loop
cout<<"[";
for(int i = 0;i<2;i++){
    //nested loop to print out the nested arr
    cout<<" ";
    for(int j = 0; j < 6; j++){
        cout<<finalArr[i][j];

        //running a condition to remove last comma
        if (j != 5){
            cout<<" , ";
        }
    }
    cout<<" ]";
    if (i != 1){
        cout<<" , ";
    }
}
cout<<"]";

```

```
        return 0;
    }
}
```

Q4:

Code:

```
#include <iostream>
```

```
using namespace std;
```

```
int * arrFunction(int num){
    //creaing a new arr because this array will destroy after this function finish
    int* arr = new int[num];
    for(int i= 0;i < num; i++){
        cout<<"enter the number for index #"<<i<<" "; cin >> arr[i]; //geting value from user
    }
    return arr;
}
```

```
int main(){
    int num; //defining integer
    cout<<"Enter the size of array: "; cin>>num; //geting size of arr
    int* arr;
    arr = arrFunction(num); //calling user define funtion

    //printing the arr
    cout<<"[ ";
    for(int i = 0;i < num;i++){
        cout<<*arr <<" ";
        arr++;
    }
    cout<<"]";
}
```

```
        delete arr; //deleting arr
    }
}
```

Q5:

Code:

```
#include <iostream>
#include <stdlib.h>
#include <time.h>
using namespace std;

int main(){
    //generating a random number btw 0 - 100
    //add srand to no repeat the same random number
    srand(time(NULL));
    int rNumber = rand() %100 +1;

    cout<<"Number generated, try to guess it"<<endl;
    int gNumber;
    cout<<"Enter your guess number: "; cin >> gNumber; //guess number from user
    int count = 0; //to track count

    //checking the number
    do{

        if(gNumber > rNumber){
            cout<<"Your number is high, please try again.. :)"<<endl;
        }
        else if(gNumber < rNumber){
            cout<<"Your number is low, please try again.. :)"<<endl;
        }
    }
```

```

else{
    cout<<"You found random number in "<<count <<" count attempts.."<<endl;
    break;
}
cout<<"Enter your guess number: "; cin >> gNumber;
count++; //incrementing count
}
//loop condition
while(true);

//giving feedback to user
if(count <= 5){
    cout<<"Excellent ;) keep it up"<<endl;
}
else{
    cout<<"good keep practising :) "<<endl;
}
}

```

Q6:

Code:

```

#include <iostream>
using namespace std;

```

```

int main(){
    char value[20]; //declaring variable
    char* ptr = value; //creating pointer
    int count = 0;
    cout<<"Type anything you want to find out the length: "; cin>>value;
}

```

```

while(*ptr != '\0'){ //giving condition
    count++; //incrementing values
    ptr++;
}

cout<<"The length of the string is: "<<count;

return 0;
}

```

Q7:

Code:

```

#include <iostream>

using namespace std;

//creating struct for distance
struct Distance{
    int feet; // creating struct variables
    float inch;
};

//struct for volume
struct Volume{
    Distance length; //declaring struct variables
    Distance width;
    Distance height;
    Distance volume;

    void getDate(Distance len, Distance wid, Distance heit){ //assing values to the variables
        length = len;
        width = wid;
    }
};

```



```

        height = heit;
    }

    void calcVolume(){ //calculating the volume for the given values

        float totalInch =((length.feet * 12) + length.inch) * ((width.feet * 12) + width.inch) *
        ((height.feet*12)+height.inch);

        volume.feet = totalInch / 12;

        volume.inch = int(totalInch) % 12;

    }

    void print(){ //printing the new volume in feet and inch

        cout<<"the Volume is: "<<volume.feet<<"feet "<<volume.inch<<"inch"<<endl;

    }

};

int main(){

    Volume v; //creating an object

    //getting values for uesr and assigning them

    cout<<"enter the length in feet and inches: " <<endl; cin>>v.length.feet>>v.length.inch;
    cout<<"enter the width in feet and inches: " <<endl; cin>>v.width.feet>>v.width.inch;
    cout<<"enter the height in feet and inches: " <<endl; cin>>v.height.feet>>v.height.inch;

    v.calcVolume(); //calling volume function

    v.print(); //calling print fuction

}

```

Q8:

Code:

```

#include <iostream>

using namespace std;

```

```
//defining a class for batsman
```

```
class Batsman{
```

```
    int bcode; //define members for the class
```

```
    string bname;
```

```
    int innings, notOut, runs;
```

```
    float batAvg;
```

```
public: //class member functions
```

```
    void calcAvg(){
```

```
        batAvg = runs/(innings-notOut); //calculatinng average
```

```
        cout<<"name: "<<bname<<endl;
```

```
    }
```

```
    //assigning values to the data members of the class
```

```
    void readData(int bcode, string bname, int innings, int notout, int runs){
```

```
        this->bcode = bcode;
```

```
        this->bname = bname;
```

```
        this->innings = innings;
```

```
        this->notOut = notout;
```

```
        this->runs = runs;
```

```
        calcAvg(); // calling calcAvg function to calculate average
```

```
        cout<<bname<<endl;
```

```
    }
```

```
    void displayData(){ //displaying the data members of the class
```

```
        cout<<"name of the batsman is: "<<this->bname<<endl;
```

```
        cout<<"code of the batsman is: "<<this->bcode<<endl;
```

```
        cout<<"total innings played: "<<this->innings<<endl;
```

```
        cout<<"not Out: "<<this->notOut<<endl;
```

```
        cout<<"total runs: "<<this->runs<<endl;
```

```

        cout<<"batting average : "<<this->batAvg;
    }

};

int main(){
    Batsman b1;

    int bcode; //define members for the class
    char bname[20];
    int innings, notOut, runs;

    cout<<"enter the code of batsman: "; cin>>bcode; //getting input from user for every variables
    cout<<"enter the name of batsman: "; cin>>bname;
    cout<<"enter the innings , notout, runs: "; cin>>innings>>notOut>>runs;

    b1.readData(bcode, bname, innings, notOut, runs); //calling readData member function
    b1.displayData(); //calling display function
}

```