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[CPSC 230]

Chapter 4- lab assignment

(20 points)

Note: Submit your assignment in the inbox (chapter 4 assignment). If the assignment includes writing a program code, then copy the codes and the outputs

Part 1, ch 4-assignment.

1- Write a program to calculate the probability of getting two six out of 3000 times on rolling two dice. Use `srand(time(NULL));` to initialize the Random number generator (to initialize different random number for each different run time)

```
//CPSC 230 RAVI PATEL DICE ROLLER
#include <iostream>

using namespace std;
int main(int argc, char *argv[]) {
    float six = 0;
    int die1;
    int die2;
    int i = 3000000;
    srand (time(NULL)); //initialized all vars

    do {

        die1 = (rand()%6) + 1; //roll dice and set result to die1
        die2 = (rand()%6) + 1; //roll dice and set result to die2

        if (die1 == 6 && die2 == 6) //if die1 and die2 are both 6
            six++; //add 1 to six counter

        --i; //go down iterations from 3000000 until 0
    }

    while (i>=0);

    cout<<"Probability of times six appears on both die: "<< ((six/3000000)*100) <<
    "%"; //display number of times six appears on both die
    cout<<"\n";
    cout<<"Number of times 6 appears on both die: "<<six;

}

//SAMPLE OUTPUT:
//Probability of times six appears on both die: 2.77107%
//Number of times 6 appears on both die: 83132
```

2- Write a program to generate 10 random values between 30 and 50? Then find the average.

```
//CPSC 230 RAVI PATEL RAND NUM GENERATOR & AVG
#include <iostream>

using namespace std;
int main(int argc, char *argv[]) {
    float avg = 0;
    srand(time(NULL));
    int rand_integer;
    int min=30, max=50;
    int range=(max-min)+1;
    for(int index=0; index<10; index++){
        rand_integer = (min + int((double)range*rand()/(double) (RAND_MAX +
1.0)));
        avg += rand_integer;
        cout << rand_integer << endl;
    }
    cout << "Average of 10 numbers between 30 and 50 is: " << avg/10;
}

//SAMPLE OUTPUT:
//34
//49
//50
//50
//46
//32
//31
//35
//41
//35
//Average of 10 numbers between 30 and 50 is: 40.3
```

3 – Write one program to test the following functions,

`static_cast<double> (11)/2, sqrt(pow(3,2), ceil(5.8),
floor(5.8), rand() % 4 + 10`

```
//CPSC 230 RAVI PATEL CH4 Assignment P1 Q3
#include <iostream>
#include <cmath>

using namespace std;
int main(int argc, char *argv[]) {
    cout << static_cast<double> (11)/2; //cast as double, result 5.5
    cout << "\n";
    cout << (sqrt(pow(3,2))); //sqrt of a power is the original number
    cout << "\n";
    cout << ceil(5.8); //ceil rounds up to 6
    cout << "\n";
    cout << floor(5.8); //floor rounds down to 5
    cout << "\n";
    cout << rand() % 4 + 10; //random number remainder when divided by 4, add
10
}
```

//SAMPLE OUTPUT:

```
//5.5
//3
//6
//5
//13
```

4 - Write a function `max1(a1,a2,a3)` to return the max number of three integer values `a1,a2` and `a3`.

```
//CPSC 230 RAVI PATEL MAX NUM FINDER
#include <iostream>
int uno = 0;
int dos = 0;
int tres = 0;

using namespace std;
int max1(int a1,int a2,int a3) {
    if (a1 == a2 == a3)
        return 0;
    if (a1 > a2)
        if (a1 > a3)
            return a1;
    if (a2 > a1)
        if (a2 > a3)
            return a2;
    if (a3 > a1)
        if (a3 > a2)
            return a3;
    if (a1 == a3)
        return a3;
    if (a1 == a2)
        return a2;
    if (a2 == a3)
        return a3;
    return 0;
}

int main(){
    cout<<"Input a number: ";
    cin>>uno;
    cout<<"Input a number: ";
    cin>>dos;
    cout<<"Input a number: ";
    cin>>tres;
    cout<<"The maximum number is: "<< max1(uno,dos,tres);
}
```

```
//SAMPLE OUTPUT:
//Input a number: 4
//Input a number: 8
//Input a number: 16
//The maximum number is: 16
```