INDEPENDENT UNIVERSITY, BANGLADESH

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

SPRING 2021

ASSIGNMENT 1

DUE: 07-03-2021, 11.59 PM.

POINT: 100P (10X10:100P)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name: Ashrafur Rahman Asem** | **Id: 201771** | **Sec: 4** | **Point:** |

**Instructions:**

**1. Plagiarism will not be tolerated.**

**2. Do not copy from any online source or from a person.**

**3. If you could not do any problem, leave it blank.**

**4. Partial mark will be given for partially solved questions.**

**5. Do not forget to fill your name, id and section. Please leave the point block as it is. Failure to fill up your name, id and section will invalid the whole assignment paper.**

**6. You also have to rename the assignment file with your id. For instance, the file name is “ID\_ \_ Assignment 1 Spring 2021” and your id is 12345. You have to rename it as “ID\_12345\_Assignment 1 Spring 2021”. Unable to follow this instruction may lead to cancel your assignment.**

**Problem Set:**

1. Write a program that takes an integer odd number from the user and then divide the number with 2 and prints the integer part and the decimal part separately. For example, if the user enters 3, the program should print: Integer part = 1 and decimal part = .5.
2. Write a program that will take the length and width of a rectangle from the user and prints the area and perimeter of the rectangle.
3. Write a program that takes the number of minutes as input and displays the equivalent number of weeks, days, hours and minutes. For example, if the user inputs 240020 minutes, the program displays 23 weeks, 5 days, 16 hours and 20 minutes.

**4.** Writer a program that checks if a number is within the range [20,85) and divisible by 5 but not by 2 (Note that the range includes 20 but excludes 85)

|  |  |
| --- | --- |
| **INPUT** | **OUTPUT** |
| 21 | No |
| 65 | Yes |
| 80 | No |
| 45 | Yes |

5.Write a program that will ask the user to enter his obtained percentage of the three subjects (English, Math and General Science) and then implements the following system with the average of the marks of those three subjects. Make sure that you understand the meaning of the brackets. “[“ means including the value,”)” means excluding value.

|  |  |
| --- | --- |
| MARK RANGE | GRADE |
| [85, 100] | A |
| [80,85) | A- |
| [75,80) | B+ |
| [70,75) | B |
| [65,70) | B- |
| [60,65) | C+ |
| [55,60) | C |
| [50,55) | C- |
| [45,50) | D+ |
| [40,45) | D |
| [0,40) | F |

6.Write a program that a character from the user and checks if it is a lower-case letter, an upper-case letter, a digit or a symbol. (Hint: learn about ASCII table)

|  |  |
| --- | --- |
| INPUT | OUTPUT |
| a | Lowercase latter |
| 9 | Digit |
| % | Symbol |
| H | Uppercase latter |
| 0 | Digit |
| , | symbol |

7. Write a program thar asks the user to enter the x and y coordinates of a point in 2-dimensional space. Then find out where the point is located. Possible locations are the four quadrants, the two axes and the origin. See the input-output table below.



|  |  |
| --- | --- |
| INPUT | OUTPUT |
| X = -5  Y= -3 | 3nd quadrant |
| X=-2.5  Y=0 | x-axsis |
| X=0  Y=0 | Origin |
| X=0  Y=12 | y-Axis |
| X=1.32  Y=2.14 | 1st quadrant |

8. Write a program that takes the lengths of the three sides of a triangle from the user and checks if the sides from a right triangle. (a right triangle is a triangle is which one angle is 90 degrees)

|  |  |
| --- | --- |
| INPUT | OUTPUT |
| 3 5 4 | Right triangle |
| 1 1 1 | Not a right triangle |
| 13 5 12 | Right triangle |
| 4.5 2.0 4.5 | Not a right triangle |

9. Write a program to input sides of a triangle and check whether a triangle is equilateral, scalene or isosceles triangle using if else.

|  |  |
| --- | --- |
| INPUT | OUTPUT |
| Input first side: 7  Input second side: 7 Input third side: 7 | Triangle is equilateral triangle |

10. Write a program to check if a year is leap year or not.

Ans: **1)** #include <iostream>

using namespace std;

int main() {

int n;

cout <<"Please enter the odd number: ";

cin >> n;

int x = float (n)/2;

cout <<"Integer part is: " << x <<endl;

float y = float (n)/2;

cout <<"Decimal part is: " << (y - x) <<endl;

return 0;

}

**2)** #include <iostream>

using namespace std;

int main() {

float length;

cout <<"Enter the value of length: ";

cin >> length;

float width;

cout <<"Enter the value of width: ";

cin >> width;

float area = (length \* width);

float perimeter = 2 \* (length + width);

cout <<"Area: " << area <<endl;

cout <<"Perimeter: " << perimeter <<endl;

return 0;

}

**3)** #include <iostream>

using namespace std;

int main() {

int minutes;

cout <<"Enter the number of minutes: ";

cin >> minutes;

int week = minutes / 10080;

int week\_d = minutes % 10080;

int day = week\_d / 1440;

int day\_d = week\_d % 1440;

int hours = day\_d /60;

int minutes1 = day\_d % 60;

cout << week<<" Weeks" <<"," << day <<" Days"<<","<< hours <<" Hours"<<","<< minutes1 <<" Minutes"<<endl;

return 0;

}

**4** **)**  #include<iostream>

using namespace std;

int main(){

int x;

cout << "Please Enter the number: ";

cin >> x;

if(x >= 20 && x <85){

if ( x%5 == 0 && x%2 != 0) {

cout << " Yes " <<endl;

}

else

{

cout << " No " <<endl;

}

}

return 0;

}

**5** **)** #include <iostream>

using namespace std;

int main() {

int m;

cout <<"Please enter your exam marks: ";

cin >> m;

if (m >= 85 && m <= 100)

{

cout << " A " <<endl;

}

else if (m >= 80 && m <= 85)

{

cout << " A- " <<endl;

}

else if (m >= 75 && m <= 80)

{

cout << " B+ " <<endl;

}

else if (m >= 70 && m <= 75)

{

cout << " B " <<endl;

}

else if (m >= 65 && m <= 70)

{

cout << " B- " <<endl;

}

else if (m >= 60 && m <= 65)

{

cout << " C+ " <<endl;

}

else if (m >= 55 && m <= 60)

{

cout << " C- " <<endl;

}

else if (m >= 50 && m <= 55)

{

cout << " C " <<endl;

}

else if (m > 45 && m <= 50)

{

cout << " D+ " <<endl;

}

else if (m > 40 && m <= 45)

{

cout << " D " <<endl;

}

else if (m > 0 && m <= 40)

{

cout << " F " <<endl;

}

else

{

cout << m << " you input wrong number please check again " <<endl;

}

return 0;

}

**6** **)** #include <iostream>

using namespace std;

int main() {

char x;

cout << "Input a single keyword: ";

cin >> x;

if (x >= 65 && x<= 90)

{

cout<< "is an Uppercase letter " <<endl;

}

else if (x >= 97 && x <= 122)

{

cout<< "is an Lowercase letter " <<endl;

}

else if (x >= 48 && x<= 57)

{

cout << "is a digits " <<endl;

}

else

{

cout << "is a Symbol " <<endl;

}

return 0;

}

**7** **)** #include <iostream>

using namespace std;

int main() {

int x,y;

cout <<"Enter the X value: ";

cin >> x;

cout << "Enter the Y value: ";

cin >> y;

if (x > 0 && y > 0)

{

cout <<"1st quadrant " <<endl;

}

else if (x < 0 && y > 0)

{

cout <<"2nd quadrant " <<endl;

}

else if (x < 0 && y < 0)

{

cout <<"3rd quadrant " <<endl;

}

else if (x > 0 && y < 0)

{

cout <<"4th quadrant " <<endl;

}

else if (x == 0 && y == 0)

{

cout <<"Origin " <<endl;

}

else if (y == 0 && x!= 0)

{

cout <<"X axis " <<endl;

}

else if (x == 0 && y!= 0)

{

cout <<"Y axis " <<endl;

}

return 0;

**8** **)** #include <iostream>

using namespace std;

int main() {

double x,y,z;

cout <<"please input the number: ";

cin >> x >> y >>z;

if ((x\*x)+ (y\*y)== (z\*z) || (x\*x)+ (z\*z)== (y\*y) || (y\*y)+(z\*z)== (x\*x))

{

cout<< "Right Triangle"<<endl;

}

else

{

cout<< "Not a Right Triangle"<<endl;

}

return 0;

}

**9** **)** #include <iostream>

using namespace std;

int main()

{

int x,y,z;

cout<< "Input first Side:";

cin>> x;

cout<< "Input Second Side:";

cin>> y;

cout<< "Input Third Side:";

cin>> z;

if (x==y && x==z && y==z)

{

cout<<"Triangle is Equilateral triangle"<<endl;

}

else if (x!=y && x!=z && y!=z)

{

cout<<"Triangle is Scalene triangle"<<endl;

}

else

{

cout<< "Triangle is Isosceles triangle"<<endl;

}

return 0;

}

**10** **)**  #include <iostream>

using namespace std;

int main() {

int x;

cout <<"Enter a leap leap year: ";

cin >> x;

if (x % 4 == 0 && x % 100 != 0)

{

cout <<"It's a leap year " <<endl;

}

else if (x % 400 != 0 && x % 100 == 0)

{

cout <<"It's not a leap year " <<endl;

}

else if (x % 400 == 0)

{

cout <<"It's a leap year " <<endl;

}

else

{

cout <<"It's a not a leap year " <<endl;

}

return 0;

}