King Fahd University of Petroleum & Minerals
Information and Computer Science Department
ICS 103: Computer Programming in C (2-3-3) [Term 092]
Homework Assignment #1 [Due Friday March 19 before midnight]

- Instructions
  - Create **one** file in word named hw1_*yourID*.doc where yourID is replaced by your student ID. This file should have the solution for all questions except the programming one.
  - Create **one** program file named hw1_q5.c (the files you save from Dev++ or turbo compiler)
  - Zip the 2 files in one file named hw1_*yourID*.zip and upload it in WebCT.
  - No group work is allowed. The homework solution has to be your own work. Any cheating will lead to severe consequences.

Question 1: (2 points)

Show the output of the following program in the space provided below it. Each square corresponds to one space

```
#include <stdio.h>
int main(void) {
int x=-725;
double y=16.479;
printf("%5d%8.2f%f\n",x,y,y);
printf("%11.4f%d%6.1f\n",y,x,y);
return 0;
}
```

	-	7	2	5				1	6	.	4	8	1	6	.	4	7	9	0	0	0	
				1	6	.	4	7	9	0	-	7	2	5			1	6	.	5		

Question 2 : (2 points): Evaluate the following expressions by hand:

expression	Value
1.5+13.5/3-3%4/6.0	5.5
1689%500%50%4	3
-2+3*-7/2+5/3*3	-9

Question 3: (2 points): Write the following expressions in C language

Mathematical Expression	C Expression
$\frac{x^{\sqrt{y}} - z^2}{x + y}$	`(pow(x,sqrt(y))-pow(z,2))/(x+y)`
$\sqrt{\sqrt{x} + y}$	`Sqrt(sqrt(x)+y)`
$1 + \frac{x^{\lvert y \rvert + x}}{y} - \sqrt{z}$	`1+pow(fabs(y)+x)/y-sqrt(z)`

Question 4: (1 points)

What will be the values of x, y, and z after executing the following statements.

```
int x=7.999;
double y=x;
double z=9/2;
```

x	y	z
7	7.0	4.0

Question 5 (3 points):

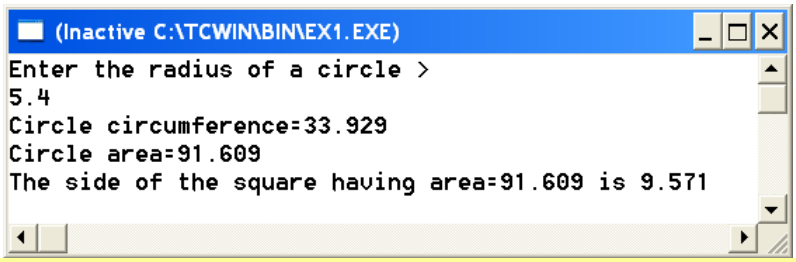
Write a program that prompts the user to enter the radius of a circle. The program displays the area and circumference of the circle. It also finds and displays the side of a square having the same area as the circle whose radius is entered by the user.

A sample run of your program is shown below.

The way to display the output must match the sample run.

Note: Define π as a constant with a value of 3.14159

All output values are displayed with 3 digits after decimal point.




```
#include <stdio.h>
#include <math.h>
#define PI 3.14159
int main(void) {
double radius, carea,circumf,side;
printf("Enter the radius of a circle >\n");
scanf("%lf",&radius);
circumf= 2*PI*radius;
carea=PI*radius*radius;
side=sqrt(carea);
printf("Circle circumference=%.3f\n",circumf);
printf("Circle area=%.3f\n",carea);
printf("The side of the square having area=%.3f is
%.3f",carea,side);
return 0;
}
```