Name: KEY **Id#**

ICS 103, Term 132

Computer Programming in C

Quiz# 3

Date: Sunday, April 20, 2014

Q1. Write a function that receives the Cartesian coordinates of two points (x1,y1) and (x2,y2) and computes and returns their distance and midpoint computed by the following formula:

$$\text{distance} = \sqrt{(x2 - x1)^2 + (y2 - y1)^2}$$

$$(xm, ym) = (\frac{x1 + x2}{2}, \frac{y1 + y2}{2})$$

Assume that the input and output arguments are of type double.

```
void DistMid (double x1, double y1, double x2, double y2, double *dist, double *xm, double *ym)
{
    *dist = sqrt(pow(x2-x1,2) + pow(y2-y1,2));
    *xm = (x1+x2)/2;
    *ym = (y1+y2)/2;
}
```

Q2. Write a program that reads scores of students from a file named "scores.txt" and prints in an output file named, "results.txt" the following:

- Number of Students
- Average score
- Highest score
- Lowest score

The number of scores is not stored in the files "scores.txt". Your program should check whether the input file opened successfully or not. Assume that scores are out of 100 and that scores are of type double.

```
#include <stdio.h>
#include <stdlib.h>


int main ()
{

  FILE *infile, *outfile;
  double score, avg=0, max=0, min=100;
  int count=0;

  infile = fopen("scores.txt", "r");
  if (infile==NULL) { // to check if input file is opened properly or not
              printf("Sorry, input file not found");
              exit(1);  // terminates the program
  }
  outfile = fopen("results.txt", "w");

  while (fscanf(infile, "%lf", &score) != EOF)
  {

    avg += score;
    if (score > max ) max = score;
    else if (score < min) min = score;
    count++;

  }

  avg = avg / count;
  fprintf(outfile, "Number of Students = %d\n", count);
  fprintf(outfile, "Average score = %0.2f\n", avg);
  fprintf(outfile, "Highest  score = %0.2f\n", max);
  fprintf(outfile, "Lowest  score = %0.2f\n", min);
  fclose(infile);
  fclose(outfile);


 system("pause");
 return 0;
```