7.2 **Try to walkthrough the following program and write down the expected results. This program is a modified version of Worksheet 5 problem 5.5. It reads from an input file a collection of examination scores ranging in value from 1 to 100. It counts and print the number of outstanding scores (90 - 100), the number of satisfactory scores (60 – 89) and the number of unsatisfactory scores (1 – 59). It should also display the average and the number of scores in each category. The program ignores scores greater than 100 and terminates when the input file is ended. Key-in the program and compare the results after execution.**

```
/* This program reads a set of scores from a data file and finds
   the average the number of scores in different categories */
/* Input data file "Infile7-2.dat" */

#include <stdio.h>
#include <stdlib.h>
#define INFILE "Infile7-2.dat"

int main (void)
{
    FILE *fpIn;
    int Score;
    double Sum = 0;
    double Average;
    int OutCounter, SatCounter, UnsatCounter;
    int NumOfData;

   printf("\nThis program reads a list of examination scores ");
    printf("\n(1 - 100) from a data file.");
    printf("\nThe program will find the number of outstanding scores (90 - 100),");
    printf("\nsatisfactory scores (60 - 89) and unsatisfactory scores (1 - 59).");

  OutCounter = SatCounter = UnsatCounter = 0;

  fpIn = fopen(INFILE, "r");
  if (!fpIn)
            {
              printf("\nCould not open file\n");
              exit(1);
            }
  else
  {
    printf("\n\nData input starts : \n");
    while ((fscanf(fpIn, "%d", &Score)) != EOF)
     if ((Score > 100) || (Score <= 0))
                printf("\n%d\tInvalid !", Score);
     else
        { Sum += Score;
            if (Score > 89)
            {
                printf("\n%d\tOutstanding !", Score);
                ++OutCounter;
            }
```

```
            else if (Score > 59)
                    {
                      printf("\n%d\tSatisfactory !", Score);
                      ++SatCounter;
                    }
                 else
                    {
                      printf("\n%d\tUnsatisfactory !", Score);
                     ++UnsatCounter;
                    }
        }
    }
    NumOfData = OutCounter+SatCounter+UnsatCounter;
    if (NumOfData != 0)
     {
         Average = Sum/NumOfData;
         printf("\n");
         printf("\nThe average is %7.2f", Average);
         printf("\nNumber of outstanding scores (90 - 100) : %4d", OutCounter);
         printf("\nNumber of satisfactory scores (60 - 89) : %4d", SatCounter);
         printf("\nNumber of unsatisfactory scores (1 - 59) : %4d", UnsatCounter);
        printf("\n");
     }

    printf("\nEnd of Program");
    printf("\n");

    return 0;
}
```

Data file "Infile7-2.dat":

```
20  40  90  84  30  49  -1  98  100  45  78  23  40  34  45  102
```

Sample running:

```
This program reads a list of examination scores
(1 - 100) from a data file.
The program will find the number of outstanding scores (90 - 100),
satisfactory scores (60 - 89) and unsatisfactory scores (1 - 59).

Data input starts :
```

Task : Modify the program so that the output can be printed to a file "OutFile7-2.dat".