**Top Bowling Score Program**

The requirements for this program are clearly laid out on the next page. I gave you a skeleton program in which each step in the program represents code that you must write.

You **must use** the symbolic constants I define in your program. You **must use** the two variables I declared in main. Obviously you will need to add a few of your own variables.

As you complete each part of the program, be sure to shorten the comment that I provided.

Please do not add any functionality to this program. Just finish it and hand it in.

**If you cannot handle the user input error checking requirement then just add a comment saying that your program assumes the user always enters valid input.**

#include <stdio.h>

// max and min 5-pin bowling scores

#define MIN\_SCORE 0

#define MAX\_SCORE 450

#define MIN\_PLAYERS 0

#define MAX\_PLAYERS 2000

int main (){

int topScore [MAX\_PLAYERS];

int numPlayers;

/\*

Step 1

**Get the number of players from the user**

**ASSUME the user enters an integer**

DO NOT ASSUME the user enters a valid integer

\*/

printf("Enter an integer for the number of players: ");

scanf("%d", &numPlayers);

printf("entered = %d", numPlayers);

while (numPlayers<=MIN\_PLAYERS | numPlayers>MAX\_PLAYERS)

{

// I assume that we need at least 1 player to play this game.

printf("Number of players must be between 1 and 2000.”);

printf("Please Enter an integer between 1 and 2000!");

scanf("%d", &numPlayers);

printf("entered = %d",numPlayers);

}

/\*

Step 2

Get numPlayers **top bowling scores** from the user

ASSUME the user enters an integer

DO NOT ASSUME the user enters valid bowling scores

\*/

topScores = [ 300, 50, 34, , … , ,]

for(i=0; i<numPlayers; i++)

{

printf("Enter an integer for top bowling scores: ");

scanf("%d", &topScore[i]);

printf("entered = %d", topScore[i]);

while (topScore[i]<MIN\_SCORE | topScore[i]>MAX\_SCORE)

{

printf("TopScore must be between 0 and 450.”);

printf("Please enter an integer again between 0 and 450!");

scanf("%d", &topScore[i]);

printf("entered = %d", topScore[i]);

}

}

/\*

Step 3

Output the top bowling scores as follows:

Here are the top scores of the 7 players ...

Player 1: 300

Player 2: 129

Player 3: 290

... and so on

Player 7: 138

\*/

printf("Here are the top scores of %d players: ", numPlayers);

for(i=0; i<numPlayers; i++)

{

printf("Player %d = %d", i+1, topScore[i]);

}

/\*

Step 4

Determine the average top score and report it as follows:

The average top score was 195.4.

\*/

TopScore = [300, 200, 100, …]

int sum = 0;

for(i=0; i<numPlayers; i++)

{

sum = sum + topScore[i];

}

printf("The average top score was = %f.", sum/numPlayers);

/\*

Step 5 LEVEL 4 Component

Create the following Frequency Distribution Table Based on the data

Top Score Frequency

0 to 75 5

76 to 150 21

151 to 225 8

226 to 300 3

301 to 375 1

376 to 450 0

Total: 38

Obviously you won't enter 38 top scores.

\*/

topScore [300, 200, 100, 5, 0, 400, 2, 150]

numPlayers = 8;

int frequencies[6] = {0, 0, 0, 0, 0, 0};

for(i=0; i<numPlayers; i++)

{

if(topScore[i] >=0 & topScore[i] <=75)

{

frequencies[0] = frequencies[0] + 1

}

if(topScore[i] >75 & topScore[i] <=150)

{

frequencies[1] = frequencies[1] + 1

}

if(topScore[i] >150 & topScore[i] <=225)

{

frequencies[2] = frequencies[2] + 1

}

if(topScore[i] >225 & topScore[i] <=300)

{

frequencies[3] = frequencies[3] + 1

}

If(topScore[i] >300 & topScore[i] <=375)

{

frequencies[4] = frequencies[4] + 1

}

If(topScore[i] >375 & topScore[i] <=450)

{

frequencies[5] = frequencies[5] + 1

}

}

printf("Top Score Frequency");

printf(" 0 to 75 %d", frequencies[0]);

printf(" 76 to 150 %d", frequencies[1]););

printf("151 to 225 %d", frequencies[2]););

printf("226 to 300 %d", frequencies[3]););

printf("301 to 375 %d", frequencies[4]););

printf("376 to 450 %d", frequencies[5]););

printf(" Total: %d", frequencies[0] + frequencies[1] + frequencies[2] + frequencies[3] + frequencies[4] + frequencies[5]);

Full Solution:

printf("Enter an integer for number of players: ");

scanf("%d", &numPlayers);

printf("entered = %d",numPlayers);

while (numPlayers<MIN\_PLAYERS | numPlayers>MAX\_PLAYERS)

{

printf("Number of players must be between 0 and 2000.”);

printf("Please Enter an integer between 0 and 2000!");

scanf("%d", &numPlayers);

printf("entered = %d",numPlayers);

}

for(i=0; i<numPlayers; i++)

{

printf("Enter an integer for top bowling scores: ");

scanf("%d", &topScore[i]);

printf("entered = %d", topScore[i]);

while (topScore[i]<MIN\_SCORE | topScore[i]>MAX\_SCORE)

{

printf("TopScore must be between 0 and 450.”);

printf("Please Enter an integer between 0 and 450!");

printf("Enter an integer for top bowling scores: ");

scanf("%d", &topScore[i]);

printf("entered = %d", topScore[i]);

}

}

printf("Here are the entered top scores: ");

for(i=0; i<numPlayers; i++)

{

printf("Player %d = %d", i, topScore[i]);

}

int sum = 0;

for(i=0; i<numPlayers; i++)

{

sum = sum + topScore[i];

}

printf("The average top score is = %f", sum/numPlayers);

int frequencies[] = {0, 0, 0, 0, 0, 0};

for(i=0; i<numPlayers; i++)

{

If(topScore[i] >0 & topScore[i] <=75)

{

frequencies[0] = frequencies[0] + 1

}

If(topScore[i] >75 & topScore[i] <=150)

{

frequencies[1] = frequencies[1] + 1

}

If(topScore[i] >150 & topScore[i] <=225)

{

frequencies[2] = frequencies[2] + 1

}

If(topScore[i] >225 & topScore[i] <=300)

{

frequencies[3] = frequencies[3] + 1

}

If(topScore[i] >300 & topScore[i] <=375)

{

frequencies[4] = frequencies[4] + 1

}

If(topScore[i] >375 & topScore[i] <=450)

{

frequencies[5] = frequencies[5] + 1

}

}

printf("Top Score Frequency");

printf(" 0 to 75 %d", frequencies[0]);

printf(" 76 to 150 %d", frequencies[1]););

printf("151 to 225 %d", frequencies[2]););

printf("226 to 300 %d", frequencies[3]););

printf("301 to 375 %d", frequencies[4]););

printf("376 to 450 %d", frequencies[5]););

printf(" Total: %d", frequencies[0] + frequencies[1] + frequencies[2] + frequencies[3] + frequencies[4] + frequencies[5]);

The solution which worked