

BIL110E Introduction to Programming Language (C)

Tutorial 1 (18.11.2019)

1. Write a C code to calculate the distance between two points on a plane.

In the main function, you should take the inputs –the coordinates of these two points- from the user, and print these values to check if they are correct or not.

You should write a function that takes the coordinates of these two points and returns the value of the distance.

You should print the distance in the main function.

Explain your code with comments. Do not forget to include the libraries that you need to use.

```
1  #include <stdio.h>
2  #include <math.h>
3
4  float distance_fn(float x1, float y1, float x2, float y2);
5
6  int main()
7  {
8      float x1, y1, x2, y2, dist;
9      printf("Please enter the x coordinate of the first point\n");
10     scanf("%f",&x1);
11     printf("Please enter the y coordinate of the first point\n");
12     scanf("%f",&y1);
13     printf("Please enter the x coordinate of the second point\n");
14     scanf("%f",&x2);
15     printf("Please enter the y coordinate of the second point\n");
16     scanf("%f",&y2);
17
18     printf("The first point: x1= %f  y1 = %f\n", x1, y1);
19     printf("The second point: x2= %f  y2 = %f\n", x2, y2);
20
21     dist = distance_fn(x1, y1, x2, y2);
22     printf("The distance between these points: %f\n", dist);
23
24     return 0;
25 }
26
27 float distance_fn(float x1, float y1, float x2, float y2) {
28     float side1, side2, result;
29     side1 = x2 - x1;
30     side2 = y2 - y1;
31     result = sqrt(side1*side1 + side2*side2);
32     return result;
33 }
```

2. Convert the pseudocode below into a C code.

```
initialize passes to zero

initialize failures to zero

initialize student to one

while student counter is less than or equal to ten

    input the next exam result
    if the student passed
        add one to passes
    else
        add one to failures

add one to student counter

print the number of passes

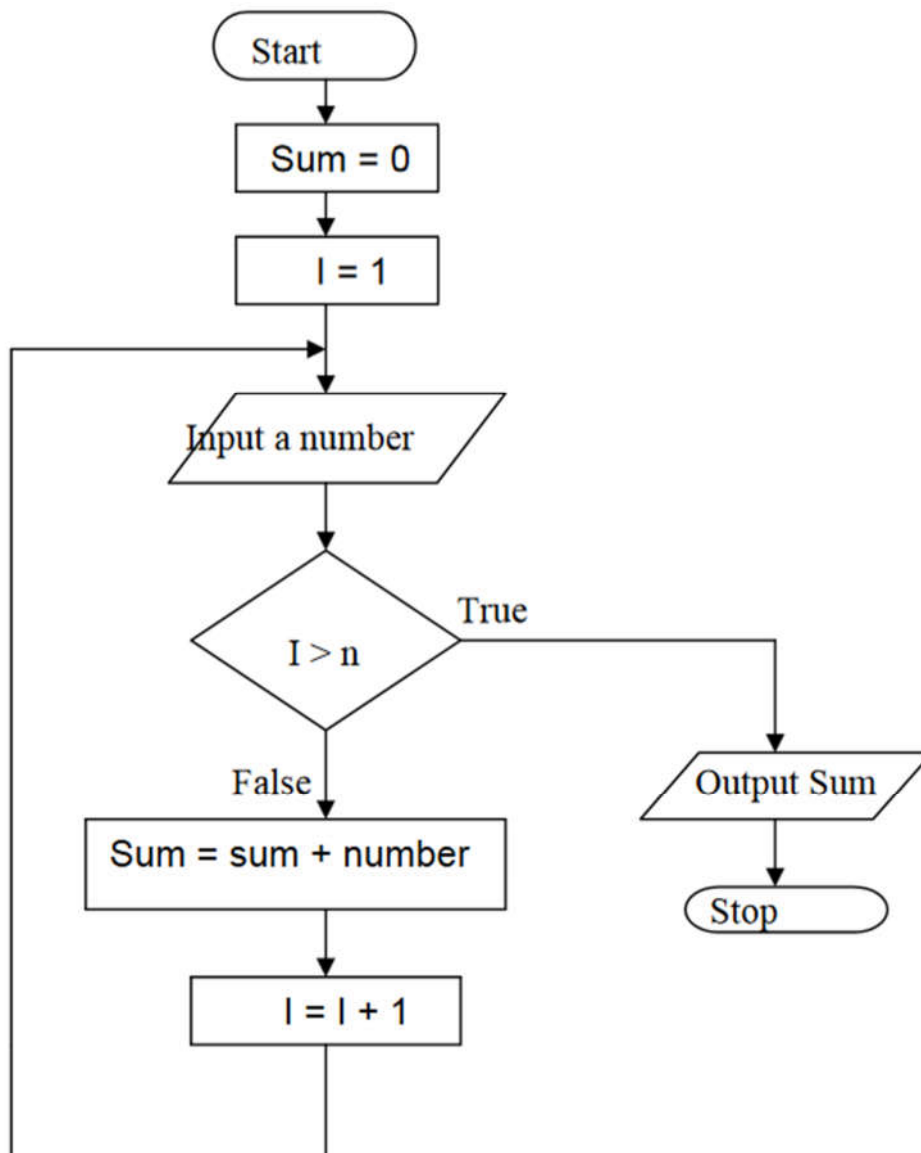
print the number of failures

if eight or more students passed

    print "raise tuition"
```

```
1 |
2 #include <stdio.h>
3
4 int main()
5 {
6     int passes, failures, student;
7     float exam_res;
8     passes = 0;
9     failures = 0;
10    student = 1;
11
12    while(student<=10) {
13        printf("Please input the next exam result: \n");
14        scanf("%f", &exam_res);
15        if(exam_res>70)
16            passes++;
17        else
18            failures++;
19        student++; }
20    printf("The number of passes: %d \n", passes);
21    printf("The number of failures % d \n", failures);
22    if(passes>=8)
23        printf("Raise tuition :)");
24    return 0;
25 }
```

3. Flowchart 1. Convert the flowchart into a C code. The variable n should be defined as $n = 5$ before the loop.

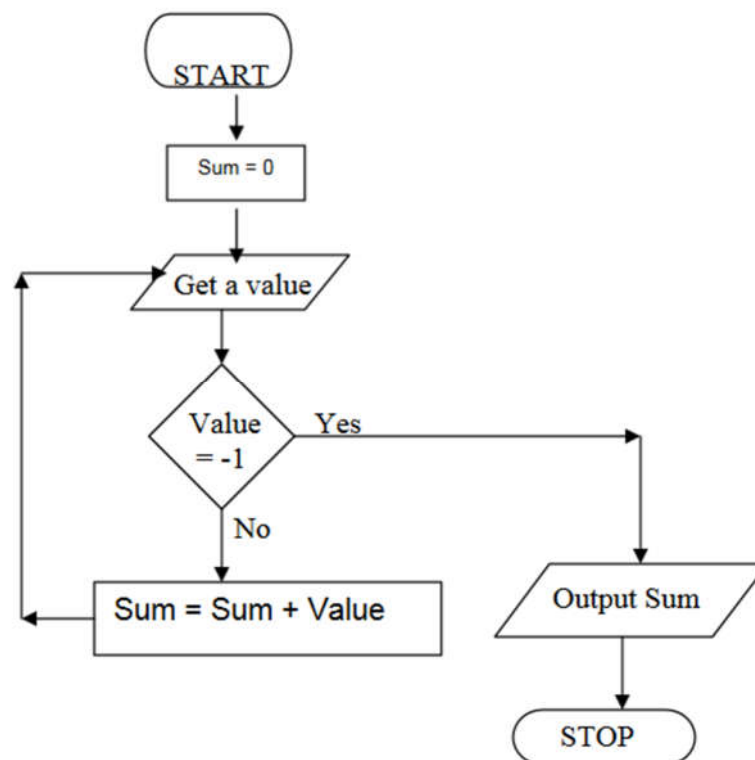


```

1
2  #include <stdio.h>
3
4  int main()
5  {
6      int sum, value, i, n;
7      sum = 0;
8      value = 0;
9      i = 1;
10     n = 5;
11     do{
12         printf("Please enter an integer\n");
13         scanf("%d", &value);
14         sum+=value;
15         i++;
16     } while(i<=n);
17     printf("The sum is %d", sum);
18     return 0;
19 }

```

4. Flowchart 2. Convert the flowchart into a C code



```
1  #include <stdio.h>
2
3  int main() {
4      float sum = 0;
5      float value;
6      printf("Input a number \n");
7      scanf("%f", &value);
8      while(value!=-1) {
9          sum += value;
10         printf("Input a number \n");
11         scanf("%f", &value);
12         //sum = sum + num;
13     }
14     printf("The sum is %f\n", sum);
15     return 0;
16 }
```