ALGORITHM & PSEUDO CODES

# Header Files:

## <stdio.h>

* printf
* fprintf
* scanf
* fscanf
* FILE
* fopen
* fclose

## <stdlib.h>

* srand
* rand

## <time.h>

* time

## <windows.h>

* COORD
* SetConsoleCursorPosition
* GetStdHandle
* STD\_OUTPUT\_HANDLE
* WORD
* HANDLE
* CONSOLE\_SCREEN\_BUFFER\_INFO
* GetConsoleScreenBufferInfo
* SetConsoleTextAttribute

# void initialize():

1. Set the value of each element of xys as 127.

# void gotoxy (int x,int y):

* 1. sets the x-coordinate
  2. sets the y-coordinate
  3. Move the cursor to (x,y) in stdout by windows.h function

SetConsoleCursorPosition.

# int random\_range(int l,int u):

1. Define a variable
2. Generate a random number and set it to the defined variable
3. Scale it to range (0,u-l+1)
4. Shift the range to (l,u-l+1) by adding l
5. return the variable

# void print\_random(int n, int N):

* 1. Open BreakingCoordinates.txt in write mode

(Raise exception if the file pointer is null)

* 1. Define x,y,i as integer variables and i initialized as 0
  2. Seed random generator(else every time it will generate same random nos.)
  3. Generate random variables and set it to x and y
  4. Write to the file
  5. REPEAT 5&6 for N-1 times more.
  6. Close file

# int istriangle(int a,int b,int c,int n):

1. Find max of a,b and c.
2. If max[n/2] then return 1
3. Else return 0

# void print\_result(int n):

* 1. Open BreakingCoordinates.txt in read mode
  2. Open TriangleYesOrNo.txt in write mode

(Raise Exception if any of the file pointer is null)

* 1. Repeat till end of file in BreakingCoordinates.txt

{

1. Get x and y from BreakingCoordinates.txt
2. Set a as min (x,y)
3. Set b as n – x-y-a max(x,y)=x+y-min(x,y)=x+y-a]
4. Set c as n-a-b[sum of the sides is the stick length]
5. Write the sides to text file
6. If istriangle(a,b,c) is 1 print ”yes”

Else print ”no”

}

1. Close both the files.

# void SetColor(int col):

* 1. Declare a handle to get the current background attribute
  2. Set the handle as standard output.
  3. Declare CSBI(CONSOLE SCREEN BUFFER INFO) for wAttributes word
  4. If GetConsoleScreenBufferInfo(hStdOut, &csbi) is non-zero then

Mask out all but the background attribute, and add the colour to text.

# void plot(int n):

1. Clear the screen.
2. Open BreakingCoordinates.txt in read mode

(Raise exception if the file pointer is null)

1. Declare required variables.
2. Repeat till end of file in BreakingCoordinates.txt

{

1. Get x and y from BreakingCoordinates.txt
2. Set a as min (x,y)
3. Set b as n – x-y-a max(x,y)=x+y-min(x,y)=x+y-a]
4. Set c as n-a-b[sum of the sides is the stick length]
5. Scale the x and y according to screen.
6. rotates y and shifts it in order to place origin at the bottom

left position

1. gotoxy(x,y);
2. If istriangle(a,b,c) is 1 change colour to green and set

xys[x][y] to 0.

Else change colour to red and set xys[x][y] to 255.

1. print '\*' at the corresponding point

}

1. gotoxy(0,120);
2. Print the legend of plot.
3. Change colour back to white

# void saveplot(int N):

1. Set the magic number P2
2. Add whitespace (Space, Tabs, CRs, LFs)
3. Add width, formatted as ASCII character in decimal
4. Add Whitespace
5. Add height, formatted as ASCII character in decimal
6. Add Whitespace
7. Put the maximum grey value, again in ASCII decimal
8. Add Whitespace
9. N x N grey values, each in ASCII decimal (Range between 0 and maximum value), separated by whitespace from top to bottom.

# main():

1. Declare n,N and option as integer.
2. Show two options according to option:

(Continue till option is 1 or 2)

* 1. Plot for particular n and no. of trials:
     1. Input the stick length and no. trials

(Raise Exception if less than or equal to one)

* + 1. initialize();
    2. print\_random(n,N);
    3. print\_result(n);
    4. plot(n);
    5. saveplot(n);
    6. Wait for enter
    7. Clear Screen

Test for different cases:

* + 1. If user enters (no. test cases) > 0 then

{

Open BreakingCoordinates.txt in write mode

Check if the file pointer is null.

REPEAT for no. of test cases:

Input the test cases and place in text file comma separated.

Close the file

}

Step 2. If no. of test cases is zero print the guidelines for manual

Input.

Step 3. Open BreakingCoordinates.txt in write mode

Check if the file pointer is null.

REPEAT till end of file:

Read stick length from file

(Raise Exception if less than or equal to one)

Take input of no. of trials from user

print\_random(n,N);

print\_result(n);

Ask user to check file.

Close the file

1. Exit main function by returning 0.