CS 151 Spring 2020

Project 7

**FOR** LOOPS

Design Shape class that has int size as instance data.

The constructor must take one parameter that initializes size.   
If the parameter is less than 3 or greater than 10 set size to 5.

Additionally, the class has four public methods that draw the following four shapes as shown for size = 5:

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The four methods should be named as follows:

* public void square()
* public void slantRight()
* public void slantLeftSolid()
* public void triangle()

The TestShape class will be used to invoke the four methods.

Design the program flow where user is asked first to enter size of the shape.

After that user is repeatedly asked to input String that is one of “S”, “SR”, “SLS”, “T”, “N”, “Q” (either lower case or upper case) to select method square, or slantRight , or slantLeftSolid, or triangle, or (N) to select new shape size, or (Q) to quit.

Run program with different shapes sizes and different shapes.

Follow instruction for the previous projects.

// Class Shape pattern:

// Implement methods, add comments

public class Shape

{

private int size;

public Shape(int n)

{ // initialize size

}

public void square()

{

}

public void slantRight()

{

}

public void slantLeftSolid()

{

}

public void triangle()

{

}

private void printChars(char c, int n)

{ // helper method to print **c** character **n** times

} // implementation is optional

}

// Class TestShape pattern:

// Implement methods, add comments

public class TestShape

{

public static void main(String[] args)

{

Scanner scan = new Scanner(System.in);

String answer = "";

do

{

int n;

System.out.print("Enter shape size (3-10): ");

// scan n

// create Shape instance

do

{

menu(); // call menu method to display options

// scan answer

switch (answer)

{

case "S": //add code for every case

break;

case "SR":

break;

case "SLS":

break;

case "T":

break;

case "ST":

break;

case "N":

break;

case "Q":

break;

default:

}

}

while (!answer.equalsIgnoreCase("N") &&   
 !answer.equalsIgnoreCase("Q"));

}while(!answer.equalsIgnoreCase("Q"));

System.out.print("Thanks!");

}

public static void menu()

{

System.out.println("Square - S");

System.out.println("Square Slant Right - SR");

// add more options

}

}

Possible program output:

Enter shape size (3-10): 3

Square - S

Square Slant Right - SR

Square Slanr Left Solid - SLS

Trinagle - T

New Shape size - N

Quit - Q

s

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Square - S

Square Slant Right - SR

Square Slanr Left Solid - SLS

Trinagle - T

New Shape size - N

Quit - Q

n

Enter shape size (3-10): 5

Square - S

Square Slant Right - SR

Square Slanr Left Solid - SLS

Trinagle - T

New Shape size - N

Quit - Q

sls

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Square - S

Square Slant Right - SR

Square Slanr Left Solid - SLS

Trinagle - T

New Shape size - N

Quit - Q

q

Thanks

//This method prints a star using printChars helper method

public void star()

{

System.out.println();

for (int i=1; i<=size-1; i++)

{

printChars(' ', 3\*size - i - 2);

printChars('\*',2\*i - 1);

System.out.println();

}

for (int i=1; i<=size; i++)

{

printChars(' ',i-1);

printChars('\*',6\*size - 2\*i - 3);

System.out.println();

}

for (int i=size-1; i>=1; i--)

{

printChars(' ',i-1);

printChars('\*',6\*size - 2\*i - 3);

System.out.println();

}

for (int i=size-1; i>=1; i--)

{

printChars(' ', 3\*size - i - 2);

printChars('\*',2\*i - 1);

System.out.println();

}

System.out.println();

}