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COSC 117 Project 2 Report

Algorithm steps:

1. Import the Java utility Scanner and assign *keyboard* to scanner for input to be taken from the user's keyboard

2. Define 3 different methods for drawing the shapes:
    a. Public static void *squaDraw*() { for the square
    b. Public static void *rectDraw*() { for the rectangle
    c. Public static void *triDraw*() { for the triangle

3. Show the menu with the numbered options

4. Prompt the user to enter their pick from the menu and inform that entering 0 would exit the program

5. Define variable *choice* as an integer input by the user

6. Name integer variables *lev* (for levels of the triangle), *len* (for the side length of the square), *wid* (for width of the rectangle), and *hei* (for the height of the rectangle)

7. Generate a while loop in the main method that processes the user's input for the variable *choice*: while (*choice* != 0){ …

8. Within the while loop, create an if else if loop that asks the user to input values depending on their *choice*
    a. if (*choice* == 1) for the square option and ask the user to input the side length of the square; then, the program will draw the square by calling to the *squaDraw* method
    b. if (*choice* == 2) for the rectangle option and ask the user to input the width and height of the rectangle; then, the program will draw the rectangle by calling to the *rectDraw* method
    c. if (*choice* == 3) for the triangle option and ask the user to input the number of levels in the triangle; then, the program will draw the square by calling to the *triDraw* method; prompt the user to input a different integer for the levels if they enter an even integer

9. Still in the while loop but separate from the if else if statements, show the menu again to the user to have them input another *choice* value for another shape or until they input 0 to

end the sequence

10. In the *squaDraw* method, define the parameter *int a* to take the value of *int len* from the main method. Use this variable to create a loop for drawing a square. After the loop is done drawing the shape, the program shall go back to the main method where the user is again offered the menu to make another selection or end the sequence with 0.

11. In the *rectDraw* method, define the parameters *int a* and *int b* to take the values of *int wid* and *int hei* from the main method. Using these parameters, make a loop to draw a rectangle. After the loop is done drawing the shape, the program shall go back to the main method where the user is again offered the menu to make another selection or end the sequence with 0.

12. In the *triDraw* method, define the parameter *int a* to take the value of *int lev* from the main method. Using this parameter, make a loop to draw a triangle. After the loop is done drawing the shape, the program shall go back to the main method where the user is again offered the menu to make another selection or end the sequence with 0.

13. The program's main method will continue to show the menu after each shape is drawn to prompt the user to pick another option until 0 is entered to stop the sequence

SOURCE CODE:

Project2.java

```
import java.util.Scanner;

public class Project2 {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner keyboard = new Scanner (System.in);
        //show the menu
        System.out.println("This program can: ");
        System.out.println("1. Draw a Square");
        System.out.println("2. Draw a Rectangle");
        System.out.println("3. Draw an Isosceles Triangle");
        //have user enter their choice. 0 exits the program
        System.out.print("Please enter the number of the option you want or 0 to exit: ");
        int choice = keyboard.nextInt();
        int lev, len, wid, hei;
        while (choice != 0) {
            if (choice == 1) {
                System.out.print("You chose a square. Enter the side length: ");
                //input length
                len = keyboard.nextInt();
                //draw the square by calling to the method
                squaDraw(len);
            }
            else if (choice == 2) {
                System.out.println("You chose a rectangle. Enter the width and height: ");
                //input the width and height
                wid = keyboard.nextInt();
                hei = keyboard.nextInt();
                //draw the rectangle by calling to the method
                rectDraw(wid,hei);
            }
            else if (choice == 3) {
                System.out.print("You chose an isosceles triangle. Enter an ODD number for its levels: ");
                //input levels
                lev = keyboard.nextInt();
                while (lev % 2 != 1) {
                    System.out.print("Invalid. Enter an ODD number: ");
                    //input again
                    lev = keyboard.nextInt();
                }
                //draw triangle by calling to the method
                triDraw(lev);
```

```
            }
            //show the menu
            System.out.println("This program can: ");
            System.out.println("1. Draw a Square");
            System.out.println("2. Draw a Rectangle");
            System.out.println("3. Draw an Isosceles Triangle");
            //have user input again until they exit with 0
            System.out.print("Please enter the number of the option you want or 0 to exit: ");
            choice = keyboard.nextInt();
        }
    }
    public static void squaDraw(int a) {
        //make loop for drawing a square
        for (int i = 0; i < a; i++) {
            for (int j = 0; j < a; j++) {
                System.out.print("*");
            }
        System.out.println();
        }
    //return to main method for next menu option
    }
    public static void rectDraw(int a, int b) {
        //make loop for drawing a rectangle
        for (int i = 0; i < b; i++) {
            for (int j = 0; j < a; j++) {
                System.out.print("*");
            }
        System.out.println();
        }
    //return to main method for next menu option
    }
    public static void triDraw(int level) {
        //make a loop for drawing a triangle
        for (int row = 1; row <= level; row++) {
            for (int space = 1; space <= level - row; space++) {
                System.out.print(" ");
            }
            for (int col = 1; col <= (row * 2) - 1; col++) {
                System.out.print("*");
            }
        System.out.println();
        }
    //return to main method for next menu option

     }
}
```

OUTPUT/TEST RESULTS FOR ALL SHAPES: