

Building a Ziggurat



Temple of Kukulcan at Chichen Itza, in the Yucatán (Mexico)

Scales by Size

- Size = 10

```
      ____ | {--} | ____
        ____ | #### {--} #### | ____
          ____ | ##### {--} ##### | ____
            ____ | ##### {--} ##### | ____
              ____ | ##### {--} ##### | ____
                ____ | ##### {--} ##### | ____
                  ____ | ##### {--} ##### | ____
                    ____ | ##### {--} ##### | ____
                      ____ | ##### {--} ##### | ____
                        ____ | ##### {--} ##### | ____
```

Size = 4

```
      ____ | {--} | ____
        ____ | #### {--} #### | ____
          ____ | ##### {--} ##### | ____
            ____ | ##### {--} ##### | ____
```

So what does the Size determine?

The **Number of lines** of its Height and **Scales** the width

Determine its Parts and which Scale?

Size = 4

```
      _____ | {--} | _____  
    _____ | ##### {--} ##### | _____  
  _____ | ##### {--} ##### | _____  
_____ | ##### {--} ##### | _____
```

So what characters or groups is each line made up of?

<spaces> ___ | #'s {--} #'s | ___ <spaces>

Which one's are the same from line to line?

___ | {--} | ___

These will just be printed.

Which one's change from line to line?

<spaces> #'s #'s <spaces>

We will need a **for loop** for each of these.

Pseudocode for the Ziggurat

```
for (all the lines){  
  for (some number of places based on the line){  
    print(" ") // the leading spaces  
  }  
  print("__|") // the left side step  
  for (some number of places based on the line){  
    print("#") // the #'s  
  }  
  print("{--}") // the temple stair  
  for (some number of places based on the line){  
    print("#") // the #'s  
  }  
  print("|__") // the right side step  
  println(); // advance to the next line  
}
```

<spaces>

|

|

#'s

{--}

#'s

|

|

Count the characters to find the equations

Size	Lines	Leading Spaces (by line)	#'s (by line)
4	4	12, 8, 4, 0	0, 4, 8, 12
10	10	36, 32, 28, 24, 20, 16, 12, 8, 4, 0	0, 4, 8, 12, 16, 20, 24, 28, 32, 36

$$\text{line} * -4 + \text{SIZE} * 4$$
 Same as $(\text{SIZE} - \text{line}) * 4$

$$\text{line} * 4 - 4$$
 Same as $(\text{line} - 1) * 4$

Size = 4

```

    ____ | {--} | ____
    ____ | ##### {--} ##### | ____
    ____ | ##### {--} ##### | ____
    ____ | ##### {--} ##### | ____
    
```

Size = 10

```

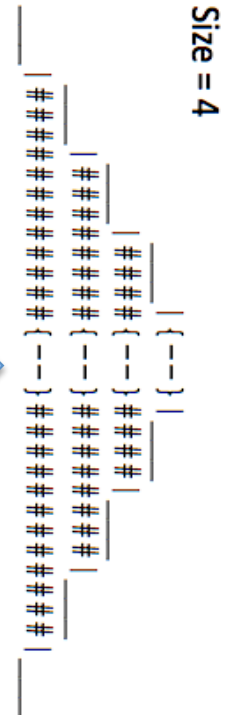
    ____ | {--} | ____
    ____ | ##### {--} ##### | ____
    ____ | ##### {--} ##### | ____
    ____ | ##### {--} ##### | ____
    ____ | ##### {--} ##### | ____
    ____ | ##### {--} ##### | ____
    ____ | ##### {--} ##### | ____
    ____ | ##### {--} ##### | ____
    ____ | ##### {--} ##### | ____
    ____ | ##### {--} ##### | ____
    ____ | ##### {--} ##### | ____
    
```

SIZE * 4

SIZE	Constant
4	16
10	40

Converted into Java

```
public static void ziggurat() {  
    for(int line = 1; line <= SIZE; line++) {  
        for(int i = 1; i <= (SIZE - line) * 4; i++) {  
            System.out.print(" ");  
        }  
        System.out.print("___|");  
        for(int i = 1; i <= (line - 1) * 4; i++) {  
            System.out.print("#");  
        }  
        System.out.print("{--}");  
        for(int i = 1; i <= (line - 1) * 4; i++) {  
            System.out.print("#");  
        }  
        System.out.print("|___");  
        System.out.println();  
    }  
}
```



The Class with a method of its own...

```
public class ZigguratDemo {
    public static final int SIZE = 4;
    public static void main(String[] args) {
/* Simply calls the method to print a Ziggurat of size SIZE */
        ziggurat();
    }

    public static void ziggurat() {
        for(int line = 1; line <= SIZE; line++) {
            for(int i = 1; i <= (SIZE - line) * 4; i++) {
                System.out.print(" ");
            }
            System.out.print("___|");
            for(int i = 1; i <= (line - 1) * 4; i++) {
                System.out.print("#");
            }
            System.out.print("{--}");
            for(int i = 1; i <= (line - 1) * 4; i++) {
                System.out.print("#");
            }
            System.out.print("|___");
            System.out.println();
        }
    }
}
```


Temple of the Moon - Teotihuacán, Mexico



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