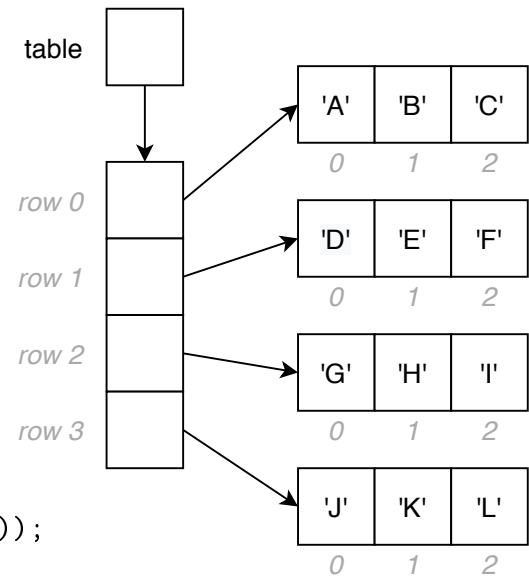# Model 1   Rectangular Array

```java
1  import java.util.Arrays;   // for toString
2
3  public class Rectangular {
4      public static void main(String[] args) {
5          char[][] table = {
6              {'A', 'B', 'C'},
7              {'D', 'E', 'F'},
8              {'G', 'H', 'I'},
9              {'J', 'K', 'L'},
10         };
11         System.out.println(table.length);
12         System.out.println(table[0].length);
13         System.out.println(table[1][2]);
14         System.out.println(Arrays.toString(table));
15     }
16 }
```


Questions (25 min)   Start time:

1. Run the program. What is the output of the following expressions?

a) `table.length`   b) `table[0].length`   c) `table[1][2]`

d) `Arrays.toString(table)`

2. Based on the model, what is the data type of the following expressions? Please answer using Java syntax, for example: `String[]`

a) `table`   b) `table[0]`   c) `table[1][2]`

3. Explain the output of `Arrays.toString(table)`. What exactly is stored in the array referenced by the variable `table`?

4. Consider the expression `table[1][2]`.

a) Which index (1 or 2) represents the row number?

b) Which index (1 or 2) represents the column number?

5. What is the result of the following expressions?

a) `table[2][1]`   c) `table[3][2]`

b) `table[0][0]`   d) `table[2][3]`

Presenter: Implement your team's answers for the following questions in Model1.java, at the end of the main method. Make sure the code compiles and runs correctly.

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6. Write three statements to print the first row of the table, one letter at a time. The output should be A B C with a space after each letter.

7. Summarize the main difference in these three lines of code.

8. Rewrite your previous code using a `for` loop. Name the loop variable `col` (instead of `i`). Your code should work for any number of columns (not just 3).

9. Copy your answer to the previous question and paste it below two times. Modify the code so that it prints row 2 and row 3. Add `println` statements so that each row ends with a newline.

10. Summarize the main differences in these two `for` loops.

11. Rewrite your previous code using nested `for` loops. Name the outer loop variable `row` and the inner loop variable `col`. Your code should work for any number of rows and columns.

12. How would you modify your code in the previous question to print only the top half of the table? (You may assume there is an even number of rows.)