Upload your source code to blackboard when you have completed all exercises *(Content → Submissions)*.

Q.1: `for` loop revision

Complete the following program:

```
public class Ex01ForLoop {
   public static void main(String[] args) {
      for(int i = 1; i <= 6; i++)
      {
         // your code here
      }
      System.out.println();
      for(int i = ?; i <= ?; ?)
      {
         System.out.print(i + "\t");
      }
   }
}
```

to produce the following output:

```
-4 14 32 50 68 86
-4 14 32 50 68 86
```

Q.2: `for` loop revision

Write a program to print every third character of a user-inputted string. The characters not displayed are instead printed as underscores. A sample run of the program may look like

```
Enter a string:  Constantinople
C _ _ s _ _ n _ _ n _ _ l _
```

Q.3: `for` loop revision

Write a program to display the following pyramid:

```
                    *
                   ***
                  *****
                 *******
                *********
               ***********
              *************
             ***************
            *****************
           *******************
```

Hint: Your program should consist of three `for` loops:

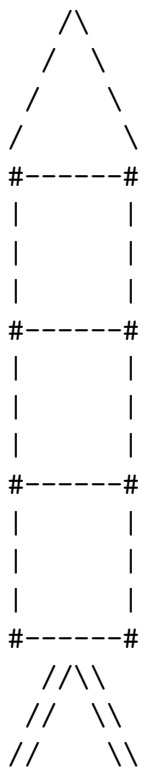
- one to cycle through each line of the pyramid,
- one to print the whitespaces and
- one to print the asterisks.

Note that the last two `for` loops mentioned above (whitespaces and asterisks) should be nested within the first loop (pyramid line).

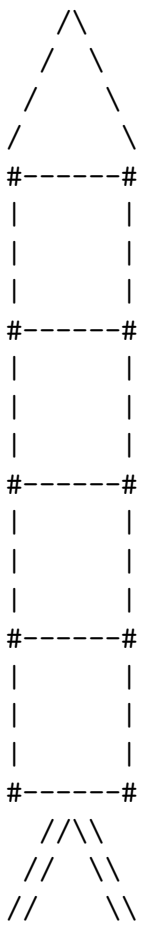
Q.4

Modify your code from Qs6 Week02 to display the following (modify to display *shuttle (a)* first, then modify that code to display *shuttle (b)* and finally *shuttle (c)*):

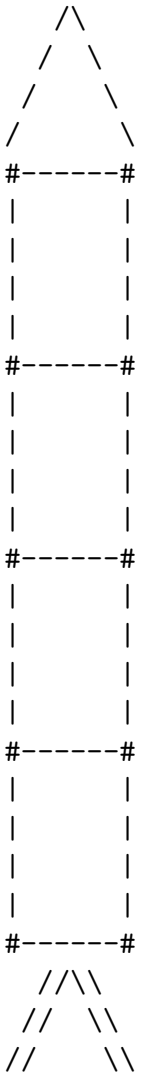
shuttle (a)



shuttle (b)



shuttle (c)



Each modification should only require a change to a single line of code.

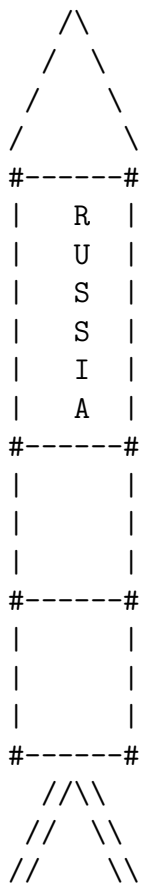
The modifications may also be achieved by declaring constants at the beginning of the class (directly after the class header, i.e. after the first opening curly brace), e.g.

```
public static final char EDGE_CHAR = '|';
public static final int LENGTH_OF_BOX = 3;
public static final int LENGTH_OF_SHUTTLE = 4;
```

Modify your code to incorporate constants and experiment with various edge symbols and values for the lengths.

Q.5

Customise one box to show a string, e.g.



Note that you will need to define a new method (e.g. `drawNamedBox`) to achieve this. Inside the method, declare a variable of type `String` that will store the country's name, e.g.

```
public static void drawNamedBox() {
      String country = "RUSSIA";
      .
      .
   }
```

You should write this method so that it can cope with any length of string. Recall the following `String` methods:

- `length()`
- `charAt(index)`

Q.6: Sharing data between modules via constants

Constants may be declared at the beginning of a class (i.e. directly after the class header – after the first opening curly brace), e.g.

```
public static final int COUNT = 3;
```

Constants declared in such a manner are accessible to all methods in the class.

Using methods and a class constant, write a program to draw the following windows:

(a) constant size: 3

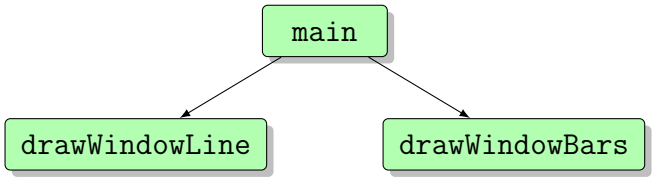
```
#===#===#
|   |   |
|   |   |
|   |   |
#===#===#
|   |   |
|   |   |
|   |   |
#===#===#
```

(b) constant size: 6

```
#======#======#
|      |      |
|      |      |
|      |      |
|      |      |
|      |      |
|      |      |
#======#======#
|      |      |
|      |      |
|      |      |
|      |      |
|      |      |
|      |      |
#======#======#
```

Note that the above outputs are simply two runs of the same program, with just the value of the class constant changed between runs.

A structure chart for your program may look as follows:

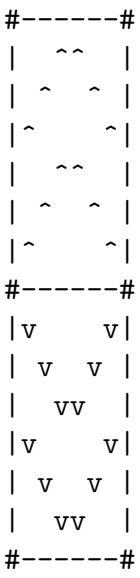


In this case, the constant `COUNT` needs to be accessible by both `drawWindowLine` and `drawWindowBars` (and possibly `main` depending on your implementation).

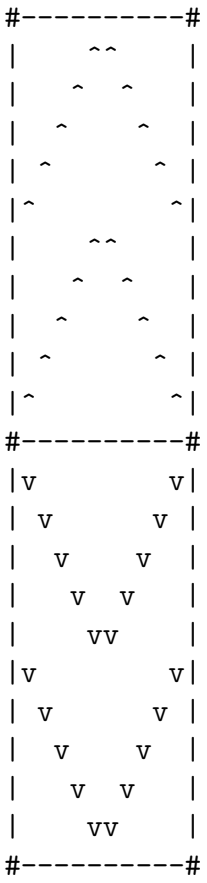
Q.7: Sharing data between modules via constants

Write a program to produce the following outputs:

(a) constant size: 3



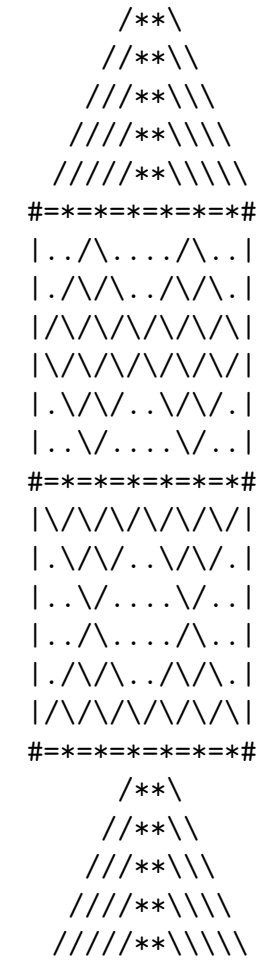
(b) constant size: 5



Q.8: OPTIONAL EXERCISE: Sharing data between modules via constants

Write a program to produce the following outputs:

(a) constant size: 3



(b) constant size: 5