**Activity 15.1**

**Lists and for loops: a review**

Study the command and answer the questions

>>>countries= ['Japan','Germany','USA','China','Austria','Turkey','Mexico']

* What does this command do?

It holds the values of the countries.

* How would you display all the values?

By calling the name of the array.

* How would you display “China”?

countries [3]

* How would you display “Japan”?

countries [0]

* How would we address the 3rd item in the list?

countries [2] and it is USA.

* Copy and run this program. Explain how it works.

for name in countries:

print(“This is one of my favourite countries “, name)

**Activity 15.2**

**Battleships: a game using two-dimensional array addressing (lists)**

**How to set up the game**

Each player decides at which index locations in the two dimensional array [row, column] to place their ships.

They have 5 ships:

* A battle ship that takes up 5 index spaces
* A cruiser that takes up 4 index spaces
* A submarine that takes up 3 index spaces
* A destroyer that takes up 2 index space
* Four spy ships disguised as a fishing boats that each take up 1 index space.

None of the ships may be placed diagonally; they must all be placed in straight lines either horizontally or vertically. It is legal (but not required) for two or more ships to be adjacent to each other. The ships are marked by blocking in the appropriate spaces.

**How to play the game**

Players take turns taking shots at each other’s ships. A shot is taken by calling out the index locations on the 8 x 8 two-dimensional array. The array index locations are given [row, column] e.g. [2, 6].

Each player takes one shot at a time.

If the player calls the coordinates of an index where a ship is located, his opponent tells him so by saying "hit." If he missed, his opponent says "miss."

Players mark the shots they take on their "Opponent" array, and whether each shot was a hit or a miss to keep track of their shots. Players may also mark the "Self" array to show the shots taken by their opponent.

A ship is sunk when all of its index locations have been hit. When this happens, the player whose ship was sunk says, for example, "You sank my spy ship."

The winner is the play who manages to sink all their opponent’s ships.

**Battleships: My battle ships**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| [0,0] | [0,1] | [0,2] | [0,3] | [0,4] | [0,5] | [0,6] | [0,7] |
| [1,0] | [1,1] | [1,2] | [1,3] | [1,4] | [1,5] | [1,6] | [1,7] |
| [2,0] | [2,1] | [2,2] | [2,3] | [2,4] | [2,5] | [2,6] | [2,7] |
| [3,0] | [3,1] | [3,2] | [3,3] | [3,4] | [3,5] | [3,6] | [3,7] |
| [4,0] | [4,1] | [4,2] | [4,3] | [4,4] | [4,5] | [4,6] | [4,7] |
| [5,0] | [5,1] | [5,2] | [5,3] | [5,4] | [4,5] | [5,6] | [5,7] |
| [6,0] | [6,1] | [6,2] | [6,3] | [6,4] | [6,5] | [6,6] | [6,7] |
| [7,0] | [7,1] | [7,2] | [7,3] | [7,4] | [7,5] | [7,6] | [7,7] |
| [8,0] | [8,1] | [8,2] | [8,3] | [8,4] | [8,5] | [8,6] | [8,7] |

**Battleships: Opponent’s battle ships**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| [0,0] | [0,1] | [0,2] | [0,3] | [0,4] | [0,5] | [0,6] | [0,7] |
| [1,0] | [1,1] | [1,2] | [1,3] | [1,4] | [1,5] | [1,6] | [1,7] |
| [2,0] | [2,1] | [2,2] | [2,3] | [2,4] | [2,5] | [2,6] | [2,7] |
| [3,0] | [3,1] | [3,2] | [3,3] | [3,4] | [3,5] | [3,6] | [3,7] |
| [4,0] | [4,1] | [4,2] | [4,3] | [4,4] | [4,5] | [4,6] | [4,7] |
| [5,0] | [5,1] | [5,2] | [5,3] | [5,4] | [4,5] | [5,6] | [5,7] |
| [6,0] | [6,1] | [6,2] | [6,3] | [6,4] | [6,5] | [6,6] | [6,7] |
| [7,0] | [7,1] | [7,2] | [7,3] | [7,4] | [7,5] | [7,6] | [7,7] |
| [8,0] | [8,1] | [8,2] | [8,3] | [8,4] | [8,5] | [8,6] | [8,7] |