Fill In The Blank

1. args.length
2. O(log n)
3. Output would be S
4. The size is 0 and the capacity is 10

Answer The Questions

1.
Advantages:

- Arrays help programmers store large amounts of data which can then be used and easily accessed later on
- They are also very adaptable so programmers can expand their uses and use them in other ways, such as multidimensional arrays which help with matrices
- We can also use them to implement linked lists, array tress, and graphs

Disadvantages:

- The initial size of an Array makes it hard for changes later on when wanting to add or adapt things
- Arrays can't have added elements unless the initialization is changed which makes it hard to adapt as stated above
- Overall changing an Array is incredibly difficult which makes using it a disadvantage

2.

By using a variable instead of a constant the Array will build based on the variables datatype and that datatype's memory storage. This can be helpful when building an array without an idea of size in mind, by making it dynamically instead we have the option to update and adapt the Array something that couldn't be done before. An example of this would be me using a int datatype for my dynamic array and then proceeding to have a user fill out the array with as many # values that they need and that the data type will permit.

3.

I believe that this is an advantage for the developer. I believe so as it will save space in the program as the developer likely doesn't need some extra elements in one row of the array. This feature makes the Array a lot more adaptable so I believe that it has no real drawbacks as long as the programmer understands how to use the Array.

4.
Pros of Using Arrays instead:

- You can use both objects and primitive data types which isn't possible with Array Lists as you can only use objects for it

- Array Lists use up a lot more memory and space compared to Arrays
- Array lists take up more time during iteration

Cons of Using Arrays instead:

- With an Array List developers have a lot more space to change the Array length and data which is not possible with a normal Array
- Functions such as indexOf() and remove() are not supported by Arrays in Java while the are in Array Lists

Understand And Fill The Code

1A. No, because you cant declare size at that point, as the array is being used as a 2d array.

1B. Yes, this just initalizes the array, it doesnt need values it can just be blank.

1C. Yes, because the arrays inirtalized are 1D and the call is for a 1D array.

1D. Yes, there will be null elements to which the inputs can be added into the 2 columns.

1E. There are 4 elements, so 4 number can fit into it.

1F. Yes, the return type will be a 2D array.

2 and 3:

```
package hw4;

public class Hw4 {

    public static int[][] room(int rows, int columns) {
int seats[][];

int[] ColumnOne = {26,22,3,0};
int[] ColumnTwo = {2,21,23,30};

seats = new int[rows][];

seats[0] = ColumnOne;
seats[1] = ColumnTwo;

return seats;

}
```

```
    public static void print(int[][] table, int rows, int columns) {

            for (int a = 0; a < rows; a++) {

                    for (int b = 0; b < columns; b++) {

                            System.out.println(table[a][b]);
          }
        }
    }

}

public class Datatest {

            public static void main(String[] args) {

                Hw4 hw4 = new Hw4();
              int [][] table = {{10,9,8,7}, {7,9,9,10}};
              hw4.print(table, 2, 4);

            }
}
```