Question1

Given the vectors

$$\mathbf{u} = (u_1, u_2, \ldots, u_m)$$

$$\mathbf{v} = (v_1, v_2, \ldots, v_n)$$

where m and n are the dimensions (size) of vectors **u** and **v** respectively, the outer product **u** ⊗ **v** is defined as the *m* × *n* matrix **A** obtained by multiplying each element of **u** by each element of **v**.

$$\mathbf{u} \otimes \mathbf{v} = \mathbf{A} = \begin{bmatrix} u_1 v_1 & u_1 v_2 & \ldots & u_1 v_n \\ u_2 v_1 & u_2 v_2 & \ldots & u_2 v_n \\ \vdots & \vdots & \ddots & \vdots \\ u_m v_1 & u_m v_2 & \ldots & u_m v_n \end{bmatrix}.$$

that is A_ij = u_i * v_j.

1. İmplement the `openInputFile(String fileName)` method. This method takes the file name of the text file and returns a BufferedReader variable rd wich can be used to iterate through lines of the file.

[10 Points]

2. Implement `readFileToArray(String fileName)` method. This method iterates through lines of the text file and assigns the values to an integer array. You need to use ***`Integer.parseInt`*** method to convert the value of as string variable to integer.

For example if u have as string variable `line` and a BufferedReader variable `rd`.

```
String line=rd.readLine();

int x=Integer.parseInt(line);
```

[15 Points]

3. Implement the `OuterProduct(int []U ,int []V)` This method takes vectors U and V and returns their outer poduct .

[25 Points]

(Run your program as java application)