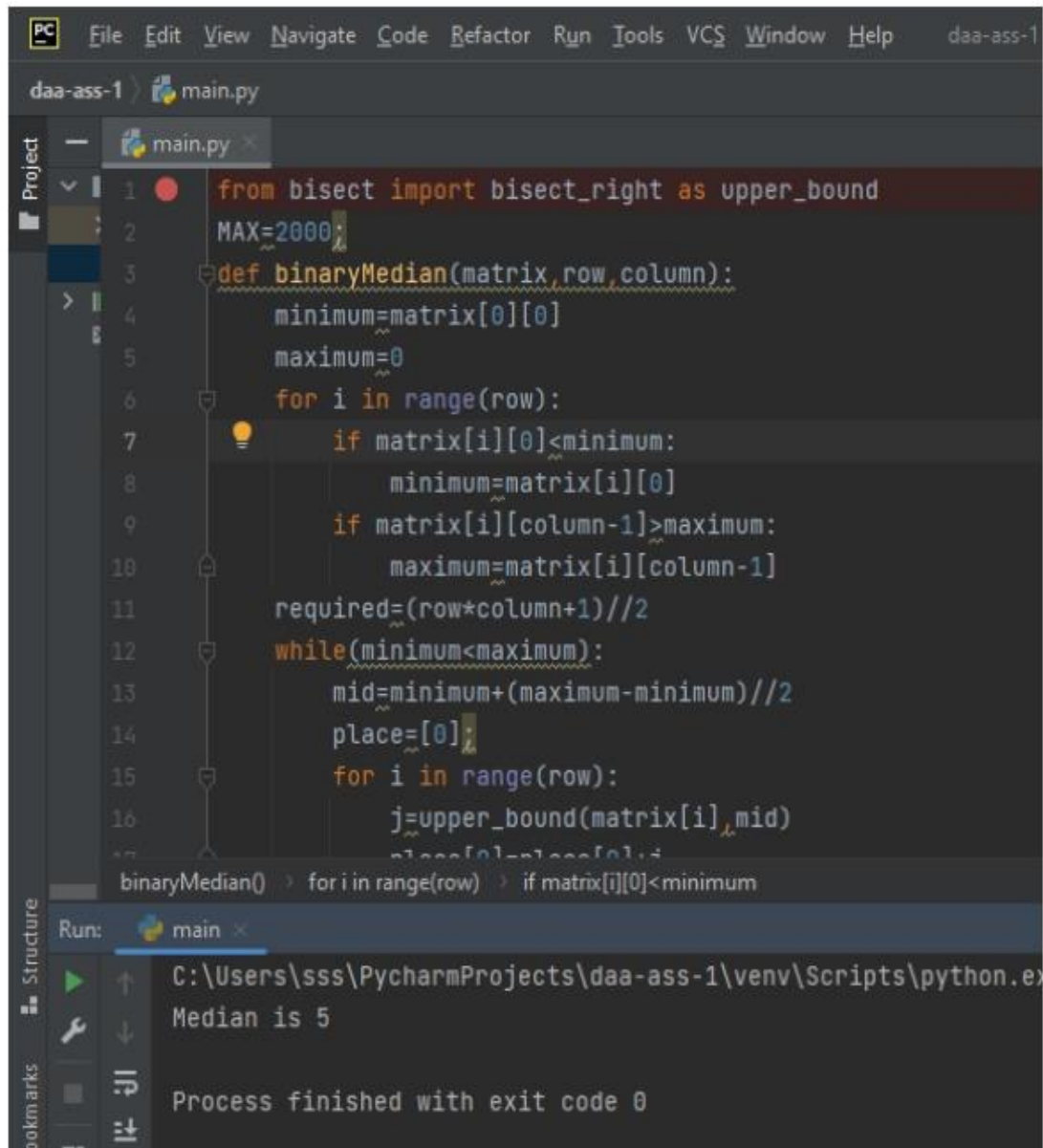


21071A6795 k.Aravind

1) Given a row wise sorted matrix of size $R \times C$ where R and C are always **odd**, find the median of the matrix.

Test Case 1:

MEDIAN=5



```
PC File Edit View Navigate Code Refactor Run Tools VCS Window Help daa-ass-1
daa-ass-1 main.py
Project main.py
1 from bisect import bisect_right as upper_bound
2 MAX=2000
3 def binaryMedian(matrix,row,column):
4     minimum=matrix[0][0]
5     maximum=0
6     for i in range(row):
7         if matrix[i][0]<minimum:
8             minimum=matrix[i][0]
9         if matrix[i][column-1]>maximum:
10            maximum=matrix[i][column-1]
11     required=(row*column+1)//2
12     while(minimum<maximum):
13         mid=minimum+(maximum-minimum)//2
14         place=[0]
15         for i in range(row):
16             j=upper_bound(matrix[i],mid)
17             place[0]+=place[0]+j
18     binaryMedian()
19     for i in range(row):
20         if matrix[i][0]<minimum:
```

Run: main

C:\Users\sss\PycharmProjects\daa-ass-1\venv\Scripts\python.exe
Median is 5
Process finished with exit code 0

Test Case 2:

Input: $R = 3, C = 1$ $M = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ **Output:** 2 **Explanation:** Sorting matrix elements gives us {1,2,3}. Hence, 2 is median.

```
PC File Edit View Navigate Code Refactor Run Tools VCS Window Help daa-
daa-ass-1 main.py
Project main.py
13 mid=minimum+(maximum-minimum)//2
14 place=[0]
15 for i in range(row):
16     j=upper_bound(matrix[i],mid)
17     place[0]=place[0]+j
18     if place[0]<required:
19         minimum=mid+1
20     else:
21         maximum=mid
22 print("Median is",minimum)
23 return
24 row,column=3,3
25 matrix=[[1,3,5],[2,6,9],[3,6,9]]
26 binaryMedian(matrix,row,column)
Run: main
C:\Users\sss\PycharmProjects\daa-ass-1\venv\Scripts\python.exe
Median is 5
Process finished with exit code 0
```

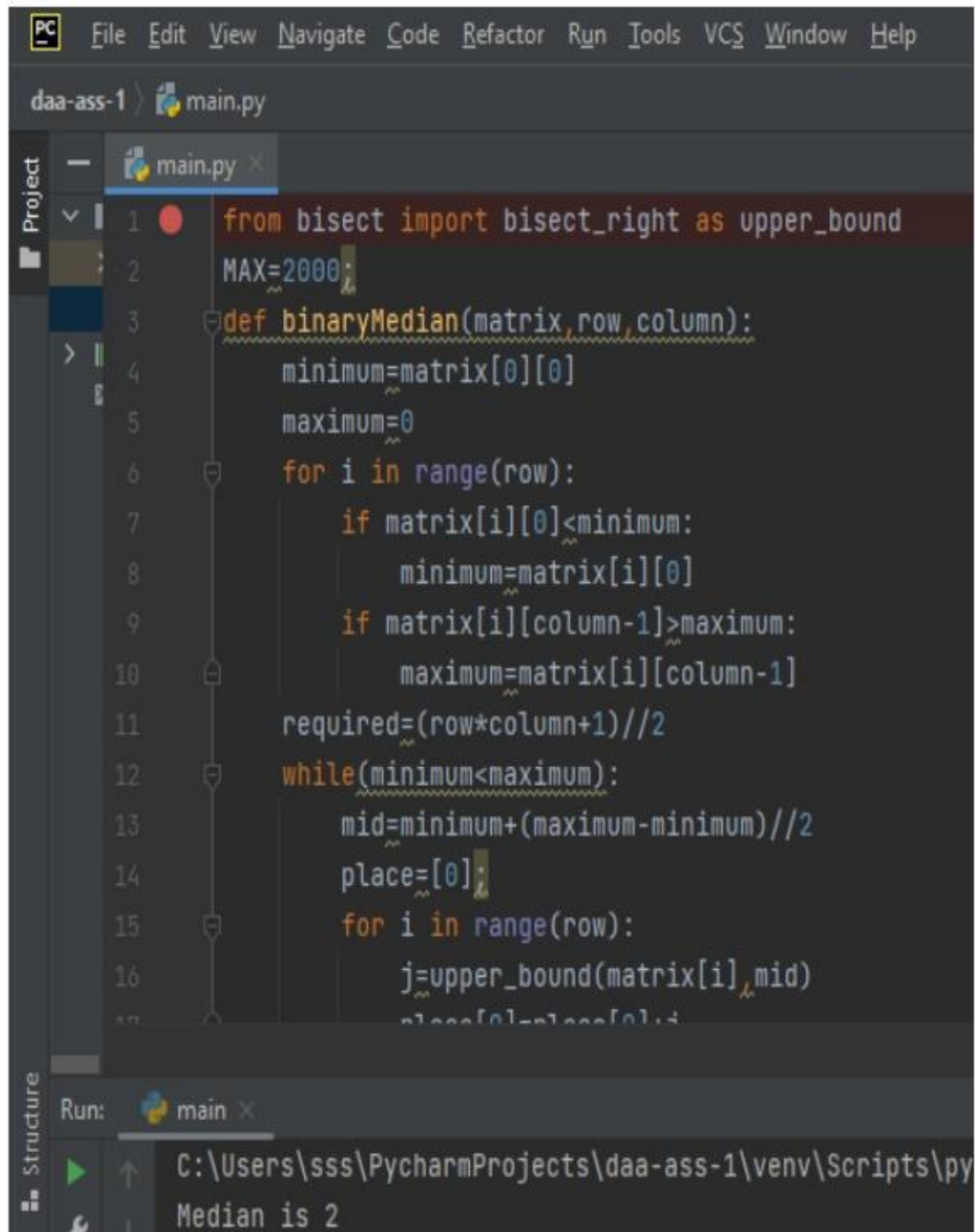
2) 2) 2. Given the arrival and departure times of all trains that reach a railway station, the task is to find the minimum number of platforms required for the railway station so that no train waits. We are given two arrays that represent the arrival and departure times of trains that stop.

Test case 1

Input: `arr[] = {9:00, 9:40, 9:50, 11:00, 15:00, 18:00}, dep[] = {9:10, 12:00, 11:20, 11:30, 19:00, 20:00}`

Output: 3

Explanation: There are at-most three trains at a time (time between 9:40 to 12:00)



```
PC File Edit View Navigate Code Refactor Run Tools VCS Window Help
daa-ass-1 > main.py

Project
- main.py x
1 from bisect import bisect_right as upper_bound
2 MAX=2000
3 def binaryMedian(matrix,row,column):
4     minimum=matrix[0][0]
5     maximum=0
6     for i in range(row):
7         if matrix[i][0]<minimum:
8             minimum=matrix[i][0]
9         if matrix[i][column-1]>maximum:
10            maximum=matrix[i][column-1]
11     required=(row*column+1)//2
12     while(minimum<maximum):
13         mid=minimum+(maximum-minimum)//2
14         place=[0]
15         for i in range(row):
16             j=upper_bound(matrix[i],mid)
17             place[0]=place[0]+j-1
18     return place[0]

Structure
Run: main x
C:\Users\sss\PycharmProjects\daa-ass-1\venv\Scripts\python.exe
Median is 2
```

Test case 2

Input: `arr[] = {9:00, 9:40}, dep[] = {9:10, 12:00}`

Output: 1

The image shows a PyCharm IDE window with a menu bar at the top containing 'File', 'Edit', 'View', 'Navigate', 'Code', 'Refactor', 'Run', 'Tools', 'VCS', and 'Window'. Below the menu bar, the project name 'daa-ass2' and the file 'main.py' are displayed. The left sidebar shows the 'Project' view with 'main.py' selected. The main editor area contains the following Python code:

```
1
2 def platform(arr, dep, n):
3     arr.sort()
4     dep.sort()
5     plat=1
6     result=1
7     i=1
8     j=0
9     while(i<n and j<n):
10         if(arr[i]<=dep[j]):
11             plat+=1
12             i+=1
13         elif(arr[i]>dep[j]):
14             plat-=1
15             j+=1
16         if(plat>result):
```

Below the editor, the 'Run' tab is active, showing the execution path 'main'. The output console displays the following text:

```
C:\Users\sss\PycharmProjects\daa-ass2\venv\Scr
Minimum Number of Platforms Required= 1
Process finished with exit code 0
```