

# EC4070: Data Structures and Algorithms

## LAB 08

K.J.M.U.G.S. Eranda Jayasinghe

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SEMESTER 4

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Q1.

```
import java.util.*;
```

```
public class FillBottle
```

```
{
```

```
    public static int maxbottles(int []array,int capacity)
```

```
    {
```

```
        int total=0,num=0;
```

```
        int[] arr = arr_sort(array);
```

```
        if (capacity <= 0)
```

```
        {
```

```
            return 0;
```

```
        }
```

```
        for (int i = 0; i<arr.length;++i)
```

```
        {
```

```
            if (total<=capacity)
```

```
            {
```

```
                total+=arr[i];
```

```
                ++num;
```

```
            }
```

```
        }
```

```
        if(total>capacity)
```

```
        {
```

```
            num-=1;
```

```
        }
```

```
        return num;
```

```
    }
```

```
    public static int [] arr_sort(int array[])
```

```
    {
```

```

        int temp;
        for(int i=0;i<array.length-1;++i)
        {
            for(int j=0;j<array.length-i-1;++j)
            {
                if(array[j]>=array[j+1])
                {
                    temp=array[j];
                    array[j]=array[j+1];
                    array[j+1]=temp;
                }
            }
        }
        return array;
    }

```

```

public static void main(String arg[])
{
    Scanner sc = new Scanner(System.in);
    System.out.print("Enter the  of capacity of the container : ");
    int capacity=sc.nextInt();
    System.out.print("Enter the number of bottle : ");
    int num = sc.nextInt();
    int [] arr2 =new int[num];
    System.out.print("Enter the bottel capacity: ");
    for(int i=0;i<num;++i)
    {
        arr2[i]= sc.nextInt();
    }
}

```

```
        System.out.println(maxbottles(arr2,capacity)+" maximum number of bottles  
can fill.");  
    }  
}
```

```
1  import java.util.*;  
2  
3  public class FillBottle  
4  {  
5      public static int maxbottles(int []array,int capacity)  
6      {  
7          int total=0,num=0;  
8          int[] arr = arr_sort(array);  
9          if (capacity <= 0)  
10         {  
11             return 0;  
12         }  
13         for (int i = 0; i<arr.length;++i)  
14         {  
15             if (total<=capacity)  
16             {  
17                 total+=arr[i];  
18                 ++num;  
19             }  
20         }  
21         if(total>capacity)  
22         {  
23             num-=1;  
24         }  
25         return num;  
26     }  
27  
28     public static int [] arr_sort(int array[])  
29     {  
30         int temp;  
31         for(int i=0;i<array.length-1;++i)  
32         {  
33             for(int j=0;j<array.length-i-1;++j)  
34             {  
35                 if(array[j]>=array[j+1])  
36                 {  
37                     temp=array[j];  
38                     array[j]=array[j+1];  
39                     array[j+1]=temp;  
40                 }  
41             }  
42         }  
43         return array;  
44     }  
45  
46     public static void main(String arg[])  
47     {  
48         Scanner sc = new Scanner(System.in);  
49         System.out.print("Enter the of capacity of the container : ");  
50         int capacity=sc.nextInt();  
51         System.out.print("Enter the number of bottle : ");  
52         int num = sc.nextInt();  
53         int [] arr2 =new int[num];  
54         System.out.print("Enter the bottel capacity: ");  
55         for(int i=0;i<num;++i)  
56         {
```

```

48 Scanner sc = new Scanner(System.in);
49 System.out.print("Enter the  of capacity of the container : ");
50 int capacity=sc.nextInt();
51 System.out.print("Enter the number of bottle : ");
52 int num = sc.nextInt();
53 int [] arr2 =new int[num];
54 System.out.print("Enter the bottel capacity: ");
55 for(int i=0;i<num;++i)
56 {
57     arr2[i]= sc.nextInt();
58 }
59 System.out.println(maxbottles(arr2,capacity)+" maximum number of bottles can fill.");
60 }
61 }
62
63
64
65

```

```

C:\Users\2021E075\OneDrive - University of Jaffna\lab8>java FillBottle
Enter the  of capacity of the container : 10
Enter the number of bottle : 5
Enter the bottel capacity: 8 5 4 3 2
3 maximum number of bottles can fill.

```

```

C:\Users\2021E075\OneDrive - University of Jaffna\lab8>java FillBottle
Enter the  of capacity of the container : 30
Enter the number of bottle : 6
Enter the bottel capacity: 6 6 6 6 6 7
5 maximum number of bottles can fill.

```

```

C:\Users\2021E075\OneDrive - University of Jaffna\lab8>java FillBottle
Enter the  of capacity of the container : 30
Enter the number of bottle : 6
Enter the bottel capacity: 7 7 7 7 7 6
4 maximum number of bottles can fill.

```