Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA : 3.18)

Department of Computer Science and Engineering (Data Science)

Name: ALISTAIR SHAAN SALDANHA

Class: K1

SAP ID: 60009200024

Experiment 2 – Assignment

Aim: Implementations min-max algorithm using divide and conquer.

Example:

1. 22, 13, -5, -8, 15, 60, 17, 31 ,47
2. 82, 36, 49, 91, 12, 14, 6, 76, 92, 55
3. 50, 40, -5, -9, 45, 90, 65, 25, 75

Code:

```
def max_min(array):
    # Length of the array
    num_of_elements = len(array)
    # If num of elements is 1 then return the element
    if num_of_elements == 1:
        return(array[0], array[0])
    # If num of elements is 2 then return max and min by comparing them
    elif num_of_elements == 2:
        if(array[0] < array[1]):
            return(array[0], array[1])
        else:
            return(array[1], array[0])
    # For more than two elements divide the array into sub groups
    else:
    # Divide equal
        mid = num_of_elements // 2
    # Store
        left = array[:mid]
        right = array[mid:]
    # Recursive Call
        [Lmin, Lmax] = max_min(left)
        [Rmin, Rmax] = max_min(right)
    # Finally find min, max values in left and right subarrays
        if(Lmin < Rmin):
            min = Lmin
        else:
            min = Rmin
        if(Lmax > Rmax):
```

Department of Computer Science and Engineering (Data Science)

```
            max = Lmax
        else:
            max = Rmax
      return min, max

# Main Function
array = [22, 13, -5, -8, 15, 60, 17, 31, 47]
min, max = max_min(array)
print("Given Array: ", array)
print(f"Minimum Element: {min} , Maximum Element: {max}")

array = [82, 36, 49, 91, 12, 14, 6, 76, 92, 55]
min, max = max_min(array)
print("Given Array: ", array)
print(f"Minimum Element: {min} , Maximum Element: {max}")

array = [50, 40, -5, -9, 45, 90, 65, 25, 75]
min, max = max_min(array)
print("Given Array: ", array)
print(f"Minimum Element: {min} , Maximum Element: {max}")
```

Output:

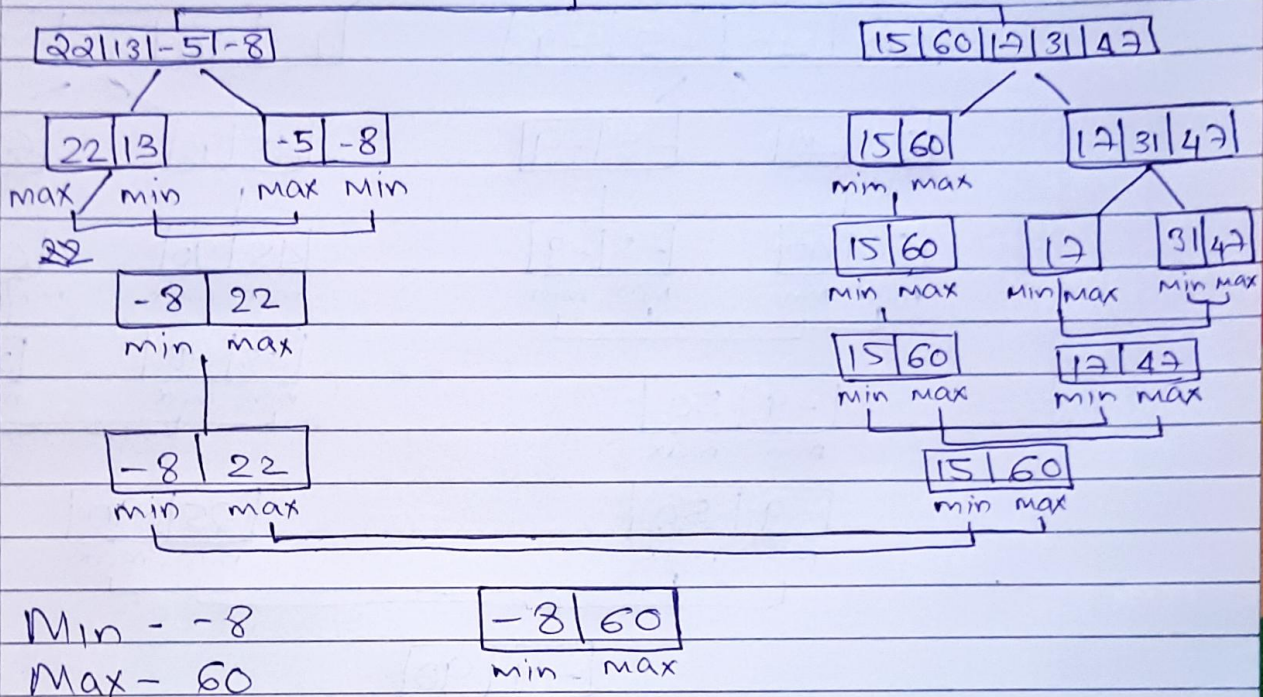
```
Given Array:  [22, 13, -5, -8, 15, 60, 17, 31, 47]
Minimum Element: -8 , Maximum Element: 60
Given Array:  [82, 36, 49, 91, 12, 14, 6, 76, 92, 55]
Minimum Element: 6 , Maximum Element: 92
Given Array:  [50, 40, -5, -9, 45, 90, 65, 25, 75]
Minimum Element: -9 , Maximum Element: 90
```

Name: Alistair Saldanha
SAPID: 60009200024

Experiment - 2

Ex-1

22 13 -5 -8 15 60 17 31 47

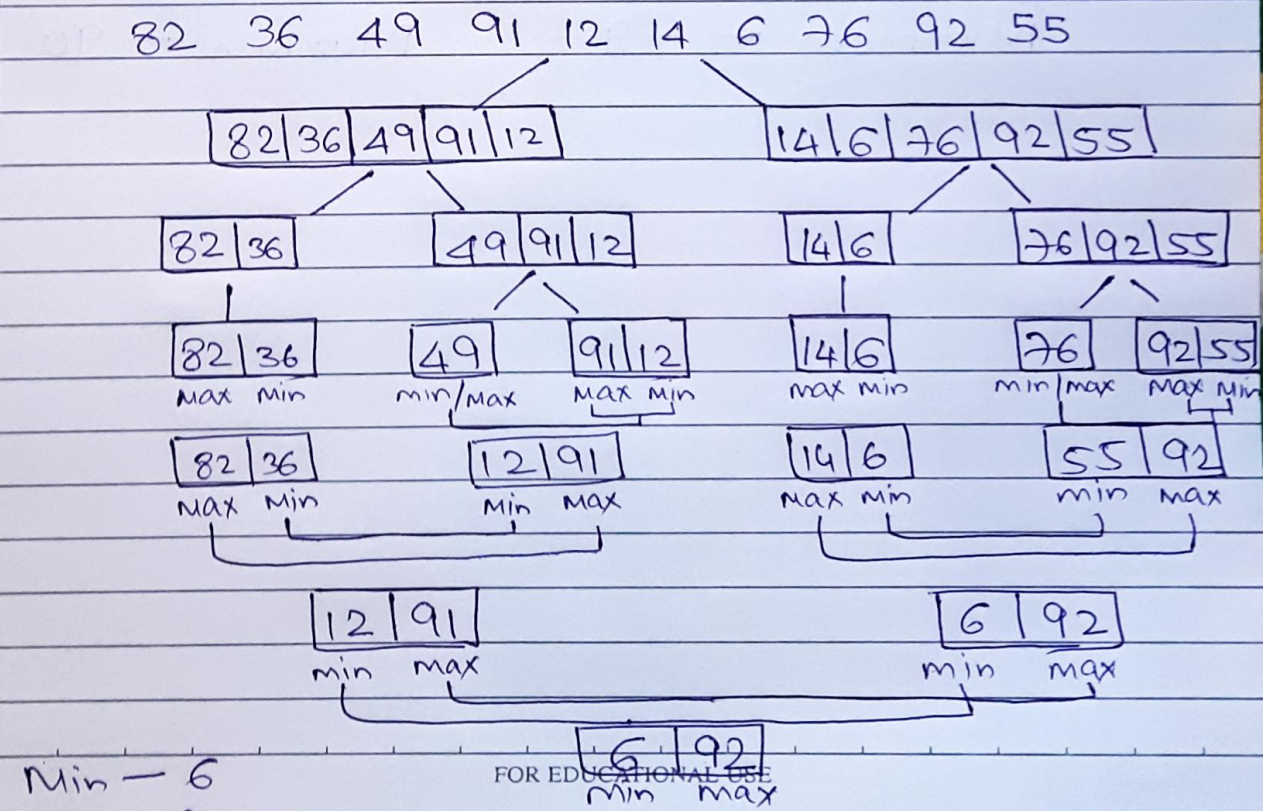


Min - -8
Max - 60

-8 60
min max

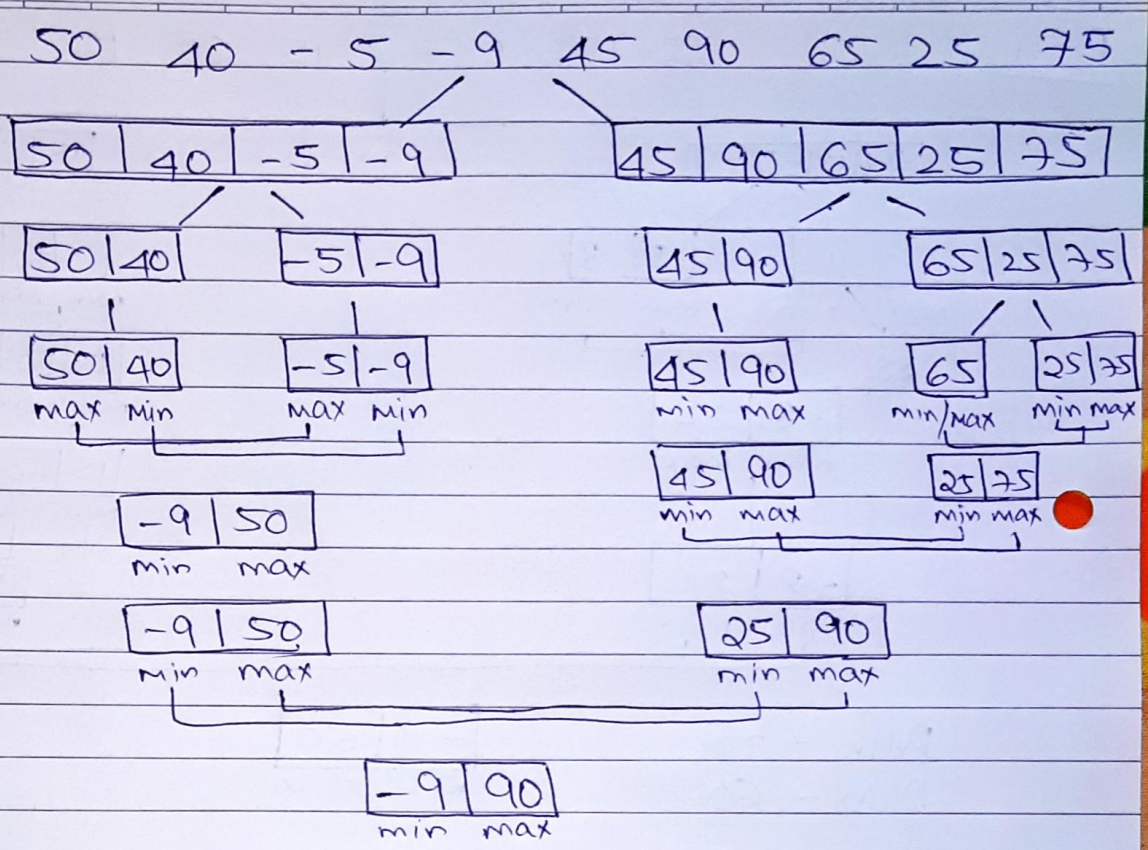
Ex-2

82 36 49 91 12 14 6 76 92 55



Min - 6
Max - 92

Ex-3



Minimum — -9 Maximum - 90