Q3)

Data

**50, 30, 100, 40, 60, 50, 80, 70, 60, 90**

Step 1 –

# 50 will be added to the heap

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 50 |  |  |  |  |  |  |  |  |  |

Step 2 –

# 30 will be added to the heap

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 50 | 30 |  |  |  |  |  |  |  |  |

Step 3 –

#100 will be added to the heap

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 50 | 30 | 100 |  |  |  |  |  |  |  |

Step 4 –

#100 trickles up

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 30 | 50 |  |  |  |  |  |  |  |

Step 5 –

# 40 is added to the heap

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 30 | 50 | 40 |  |  |  |  |  |  |

Step 6 –

#40 trickles up

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 40 | 50 | 30 |  |  |  |  |  |  |

Step 7 –

#60 is added to the heap

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 40 | 50 | 30 | 60 |  |  |  |  |  |

Step 8 –

#60 trickles up

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 60 | 50 | 30 | 40 |  |  |  |  |  |

Step 9 –

#50 is added to the heap

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 60 | 50 | 30 | 40 | 50 |  |  |  |  |

Step 10 –

#80 is added to the heap

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 60 | 50 | 30 | 40 | 50 | 80 |  |  |  |

Step 11 –

#80 trickles up

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 60 | 80 | 30 | 40 | 50 | 50 |  |  |  |

Step 12 –

#70 is added to the heap

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 60 | 80 | 30 | 40 | 50 | 50 | 70 |  |  |

Step 13 –

#70 trickles up

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 70 | 80 | 60 | 40 | 50 | 50 | 30 |  |  |

Step 14 –

#60 is added to the heap

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 70 | 80 | 60 | 40 | 50 | 50 | 30 | 60 |  |

Step 15 –

#90 is added to the heap

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 70 | 80 | 60 | 40 | 50 | 50 | 30 | 60 | 90 |

Step 16 –

#90 trickles up

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **100** | **90** | **80** | **60** | **70** | **50** | **50** | **30** | **60** | **40** |

#THIS IS THE FINAL HEAP