Seminar 7: Algorithms

1. Make a complete binary tree of the following list. Then heapify the tree to min heap.[6 marks]

7 18 6 9 25 4 13 32 20 1

After heapifying:

1. Use Gale-Shapley algorithm to compute a stable matching for the following input.[4 marks]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Ahmed | St | B | U | R |
| Sarah | U | R | St | B |
| Mina | R | St | B | U |
| Peter | U | R | St | B |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| UCLH | S | A | M | P |
| Royal Free | S | M | A | P |
| Barnet | A | S | P | M |
| St Thomas | M | A | S | P |

First round:

(U-S), (R-S),(B-A), (St-M) : Sarah rejects R

Second round:

(R-M): Mina has two offered from R and St, she rejects St

Third round

(St-A): ahmed has two offered B and St, he rejects Barnet

Fourth round (B-S): Sarah rejects it, fifth round (B-P) P accepts: Final M={(U-S), (R-M), (B-P), (St-A)}