Question 4

a) Searching for 72:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pass # | Index 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 0 | 23 | 27 | 30 | 34 | 41 | 49 | 51 | 55 | 57 | 60 | 67 | 72 | 78 | 83 | 96 |
| 1 | L |  |  |  |  |  |  | M |  |  |  |  |  |  | U |
| 2 |  |  |  |  |  |  |  |  | L |  |  | M |  |  | U |
|  |  |  |  |  |  |  |  |  |  |  |  | Done |  |  |  |

b) Searching for 41:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pass # | Index 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 0 | 23 | 27 | 30 | 34 | 41 | 49 | 51 | 55 | 57 | 60 | 67 | 72 | 78 | 83 | 96 |
| 1 | L |  |  |  |  |  |  | M |  |  |  |  |  |  | U |
| 2 | L |  |  | M |  |  | U |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  | L | M | U |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  | L/M/U |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | Done |  |  |  |  |  |  |  |  |  |  |

c) Searching for 62:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pass # | Index 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 0 | 23 | 27 | 30 | 34 | 41 | 49 | 51 | 55 | 57 | 60 | 67 | 72 | 78 | 83 | 96 |
| 1 | L |  |  |  |  |  |  | M |  |  |  |  |  |  | U |
| 2 |  |  |  |  |  |  |  |  | L |  |  | M |  |  | U |
| 3 |  |  |  |  |  |  |  |  | L | M | U |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  | L/M/U |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  | Not in array, done |  |  |  |  |

Question 6

Normally binary search looks like this:

Graphical user interface, text, application

Description automatically generated

The modified version of binary search looks like this:

Graphical user interface, text

Description automatically generated

Question 8

Binary Search has efficiency

1. 3
2. 2
3. 4
4. 5
5. 6
6. 7
7. 9
8. 10
9. 14