#1

Diagram, engineering drawing

Description automatically generated

#2

A picture containing diagram

Description automatically generated

A picture containing chart

Description automatically generated

Result Heap: 16, 19, 20, 27, 38, 24, 32, 42, 35, 52

**#3**Diagram

Description automatically generated

Diagram

Description automatically generated

#4

H (9) = 9 % 11 = 9

H (23) = 23 % 11 = 1

H (43) = 43 % 11 = 10

H (56) = 56 % 11 = 1

H (37) = 37 % 11 = 4

H (32) = 32 % 11 = 10

H (12) = 12 % 11 = 1

H (15) = 15 % 11 = 4

H (28) = 28 % 11 = 6

H (20) = 20 % 11 = 9

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 23  56  12 |  |  | 37  15  null |  | 28  null |  |  | 9  20  null | 43  32  null |

null

#5

H (9) = 9 % 11 = 9

H (23) = 23 % 11 = 1

H (43) = 43 % 11 = 10

H (56) = 56 % 11 = 2

H (37) = 37 % 11 = 4

H (32) = 32 % 11 = 0

H (12) = 12 % 11 = 3

H (15) = 15 % 11 = 5

H (28) = 28 % 11 = 6

H (20) = 20 % 11 = 7

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 32 | 23 | 56 | 12 | 37 | 15 | 28 | 20 |  | 9 | 43 |

#6

H (37) = 37 % 11 = 4 collision

H’ (37) = (1 + 37) % 10 = 8

i = 1, (4 + 1 \* 8) % 11 = 1 collision

i = 2, (4 + 2 \* 8) % 11 = 9 collision

i = 3, (4 + 3 \* 8) % 11 = 6

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 23 | 57 |  | 15 | 18 | 37 | 45 |  | 53 | 65 |