Q1

**(1.5 mark for each correct placing in table)**

h1(K) = Key % TableSize

h2(K) = i.h1(K) + 1

For i=0;

|  |  |
| --- | --- |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 | 60 |
| 6 | 160 |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 |  |

Insert 16

16%11=5 (colision)

5 + h2(K) = 5 + (0+1) = 5+1 =6 (collision)

5 + h2(K) = 5 + (5+1) = 11 % 11 =0

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 | 60 |
| 6 | 160 |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 |  |

Insert 17

17%11=6 (colision)

6 + h2(K) = 6 + (0+1) = 6+1 =7

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 | 60 |
| 6 | 160 |
| 7 | **17** |
| 8 |  |
| 9 |  |
| 10 |  |

Insert 27

27%11=5 (colision)

5 + h2(K) = 5 + (15+1) = 5+16 =21 % 11 = 10

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 | 60 |
| 6 | 160 |
| 7 | **17** |
| 8 |  |
| 9 |  |
| 10 | **27** |

Insert 38

38%11=5 (colision)

5 + h2(K) = 5 + (20+1) = 5+21 =26 % 11 = 4

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 | **38** |
| 5 | 60 |
| 6 | 160 |
| 7 | **17** |
| 8 |  |
| 9 |  |
| 10 | **27** |

Insert 49

49%11=5 (colision)

5 + h2(K) = 5 + (25+1) = 5+26 =31 % 11 = 9

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 | **38** |
| 5 | 60 |
| 6 | 160 |
| 7 | **17** |
| 8 |  |
| 9 | **49** |
| 10 | **27** |

Insert 18

18%11=7 (colision)

7 + h2(K) = 7 + (0+1) = 7+1 =8 % 11 = 8

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 | **38** |
| 5 | 60 |
| 6 | 160 |
| 7 | **17** |
| 8 | **18** |
| 9 | **49** |
| 10 | **27** |

For i=1;

Insert 16

16%11=5 (colision)

5 + h2(K) = 5 + (5+1) = 11 % 11 =0

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 | 60 |
| 6 | 160 |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 |  |

Insert 17

17%11=6 (colision)

6 + h2(K) = 6 + (6+1) = 13 % 11=2

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 | **17** |
| 3 |  |
| 4 |  |
| 5 | 60 |
| 6 | 160 |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 |  |

Insert 27

27%11=5 (colision)

5 + h2(K) = 5 + (15+1) = 5+16 =21 % 11 = 10

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 | **17** |
| 3 |  |
| 4 |  |
| 5 | 60 |
| 6 | 160 |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 | **27** |

Insert 38

38%11=5 (colision)

5 + h2(K) = 5 + (20+1) = 5+21 =26 % 11 = 4

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 | **17** |
| 3 |  |
| 4 | **38** |
| 5 | 60 |
| 6 | 160 |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 | **27** |

Insert 49

49%11=5 (colision)

5 + h2(K) = 5 + (25+1) = 5+26 =31 % 11 = 9

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 | **17** |
| 3 |  |
| 4 | **38** |
| 5 | 60 |
| 6 | 160 |
| 7 |  |
| 8 |  |
| 9 | **49** |
| 10 | **27** |

Insert 18

18%11=7 (colision)

7 + h2(K) = 7 + (21+1) = 29 % 11 =7

|  |  |
| --- | --- |
| 0 | **16** |
| 1 |  |
| 2 | **17** |
| 3 |  |
| 4 | **38** |
| 5 | 60 |
| 6 | 160 |
| 7 | **18** |
| 8 |  |
| 9 | **49** |
| 10 | **27** |

Q2

Advantages:

1. Secondary clusters avoided
2. Load factor = 1 (ideal case)