|  |  |
| --- | --- |
| **ACTIVITY** | **STACK** |
| VISTIT F | F |
| VISIT G | G F |
| VISIT E | E G F |
| VISIT C | C E G F |
| VISIT A | A C E G F |
| VISIT B | B A C E G F |
| VISIT D | D B A C E G F |
| POP | B A C E G F |
| POP | A C E G F |
| POP | C E G F |
| POP | E G F |
| POP | G F |
| POP | F |
| POP | - |

Depth Search Traversal: D B A C E G F (Order of removing)

3) C,H,D,B,F,I,J,G,E,A

4) Separate Chaining – Linked List: No need size ,inserting efficient

Open Addressing – Array: Fixed Size

Values: 369,210,789,511,401,611,467,315

**Separate Chaining**

**Hash Function**

1. **369%10 = 9**
2. **210%10 = 0**
3. **789%10 =9**
4. **511%10 = 1**
5. **401%10 = 1**
6. **611 %10 = 1**
7. **467%10 = 7**
8. **315%10 = 5**

|  |  |
| --- | --- |
| **9** | **369->789->null** |
| **8** |  |
| **7** | **467->null** |
| **6** |  |
| **5** | **315->null** |
| **4** |  |
| **3** |  |
| **2** |  |
| **1** | **511->401->611->null** |
| **0** | **210->null** |

**Open Addressing**

**1.Linear Probing**

**2.Quadric Probing**

**3.double hashing**

**Linear Probing**

|  |  |
| --- | --- |
| **9** | **369** |
| **8** |  |
| **7** |  |
| **6** |  |
| **5** |  |
| **4** | **611** |
| **3** | **401** |
| **2** | **511** |
| **1** | **789** |
| **0** | **210** |

**Hash Function**

1. **369%10 = 9**
2. **210%10 = 0**
3. **789%10 =9**
4. **511%10 = 1**
5. **401%10 = 1**
6. **611 %10 = 1**
7. **467%10 = 7**
8. **315%10 = 5**

**Quadric Probing**

|  |  |
| --- | --- |
| **9** | **369** |
| **8** |  |
| **7** |  |
| **6** |  |
| **5** | **611** |
| **4** |  |
| **3** | **789** |
| **2** | **401** |
| **1** | **511** |
| **0** | **210** |

**Hash Function**

1. **369%10 = 9**
2. **210%10 = 0**
3. **789%10 =9 => 9+12= >10**

**10%10=>0**

**9+22=>13**

**13%10=>3**

1. **511%10 = 1**
2. **401%10 = 1 => 1+12=>2**
3. **611 %10 = 1=> 1+12=>2**

**1+22=> 5**

1. **467%10 = 7**
2. **315%10 = 5**

**Double Hashing**

|  |  |
| --- | --- |
| **9** | **369** |
| **8** |  |
| **7** | **611** |
| **6** |  |
| **5** | **511** |
| **4** |  |
| **3** | **401** |
| **2** |  |
| **1** | **789** |
| **0** | **210** |

**Hash Function Step Size**

1. **369%10 = 9**
2. **210%10 = 0**
3. **789%10 =9 1 9+1=10**

**10%10=>0**

**0+1= 1**

1. **511%10 = 1 4 1+4 = 5**
2. **401%10 = 1 4 1+4 = 5**

**5+4 = 9**

**9+4 = 13%10=>3**

1. **611 %10 = 1 4 1+4 = 5**

**5+4 = 9**

**9+4 = 13%10=>3**

**3+4 = 7**

1. **467%10 = 7**
2. **315%10 = 5**

**Note: Cannot insert 467 and 315 values into hashtable Because hashTable is full. In Hashtable, we won’t get more than two-thirds full. Since the array size is 10, we can insert only 6 values. (Maximum)**

**Constant: 5**

**Step size = constant – (key % constant)**

**789**

**= 5 – (9%5) => 5 -4 = 1**

**511**

**= 5 – (1%5) => 5-1=>4**

**Breadth First Traversal**

**Starting at Vertex A**

|  |  |
| --- | --- |
| **ACTIVITY** | **QUEUE** |
| VISIT A | A |
| VISIT B | A B |
| VISIT C | A B C |
| VISIT E | A B C E |
| REMOVE | B C E |
| VISIT D | B C E D |
| REMOVE | C E D |
| REMOVE | E D |
| VISIT F | E D F |
| VISIT G | E D F G |
| REMOVE | D F G |
| REMOVE | F G |
| REMOVE | G |
| REMOVE | - |

Breadth first Traversal: A B C E D F G (order of removing)

Page No: 30

Pre – Order/Pre – fix : P, LC, RC

In– Order/In – fix : LC,P,RC

Post– Order/Post – fix : LC,RC,P