|  |  |  |
| --- | --- | --- |
| **Iteration** | **Inversion** | **#Inversion** |
| **0** | (34,8), (34,32), (34,21), (64,51), (64,32), (64,21), (51,32), (51,21), (32,21) | **9** |
| **1** | (34,32)(34,21)(64,51)(64,32)(64,21)(51,32)(51,21)(32,21) | **8** |
| **2** | (34,32)(34,21)(51,32)(51,21)(64,32)(64,21) | **6** |
| **3** | (34,32)(34,21)(51,32)(51,21)(32,21)(64,51) | **6** |
| **4** | (34,32)(34,21)(51,32)(51,21)(32,21) | **5** |
| **5** | (34,32)(34,21)(32,21)(51,21) | **4** |
| **6** | (34,32)(34,21)(32,21) | **3** |
| **7** | (34,21)(32,21) | **2** |
| **8** | (32,21) | **1** |
|  | Total Inversion | **44** |

**Question 1:**

**Bubble Sort:**

**Selection Sort:**

|  |  |  |
| --- | --- | --- |
| **Iteration** | **Inversion** | **#Inversion** |
| **0** | (34,8), (34,32), (34,21), (64,51), (64,32), (64,21), (51,32), (51,21), (32,21) | **9** |
| **1** | (34,32)(34,21)(64,51)(64,32)(64,21)(51,32)(51,21)(32,21) | **8** |
| **2** | (61,51)(64,32)(64,34)(51,32)(51,34) | **5** |
| **3** | (51,34))(64,34) | **2** |
| **4** | (64,51) | **1** |
|  | Total Inversion | **25** |

**Insertion Sort:**

|  |  |  |
| --- | --- | --- |
| **Iteration** | **Inversion** | **#Inversion** |
| **0** | (34,8), (34,32), (34,21), (64,51), (64,32), (64,21), (51,32), (51,21), (32,21) | **9** |
| **1** | (34,32)(34,21)(64,51)(64,32)(64,21)(51,32)(51,21)(32,21) | **8** |
| **2** | (32,21)(64,51)(64,21)(51,21) | **5** |
| **3** | (64,51) | **1** |
|  | Total Inversion | **23** |

**Question 2:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item#** | **Operation** | **Cost for us** | **Customer paid** | **Profit** | **balance** |
| **7** | Add | 1 to add | **7** | **6** | **21** |
| **8** | Add | 1 to add | **7** | **6** | **27** |
| **9** | Add | 3(8) to resize  We have 16 slot  1 to add | **7** | **6** | **3**  **9** |
| **10** | Add | 1 to add | **7** | **6** | **15** |
| **11** | Add | 1 to add | **7** | **6** | **21** |
| **12** | Add | 1 to add | **7** | **6** | **27** |
| **13** | Add | 1 to add | **7** | **6** | **33** |
| **14** | Add | 1 to add | **7** | **6** | **39** |
| **15** | Add | 1 to add | **7** | **6** | **45** |
| **16** | Add | 1 to add | **7** | **6** | **51** |
| **17** | Add | 3(16) to resize  We have 32 slot  1 to add | **7** | **6** | **3**  **9** |
| **18** | Add | 1 to add | **7** | **6** | **15** |