COMP601: Data Structures and Algorithms

Assignment 1 – Task2

Task 2 is simulation of an invigilation of an exam which has 50 students. In the task 2, it is 2 cases need to be consider: 1. Collect all those papers and sort. 2. Collect and sort and the same and print all paper when number of paper reach x0th.

The data structure I designed can count how many paper has been collected, also able to sort the paper by use insertion sort to sort paper by last name order.

The reason I choose use insertion sort is because it can shift each item to the right place, it is very similar to human sort.

The complexity of the insertion sort is n^2.

Sample output (from console) – case 1

Which case you want to test?

1.Case 1

2.Case 2

1

First Name: Gustavus Last Name: Adolphus Program: X ID:79 Year 1

First Name: BR Last Name: Ambedkar Program: E ID:70 Year 1

First Name: Joan Last Name: Arc Program: W ID:69 Year 1

First Name: Napoleon Last Name: Bonaparte Program: R ID:80 Year 1

First Name: Augustus Last Name: Caesar Program: H ID:67 Year 2

First Name: Julius Last Name: Caesar Program: J ID:76 Year 2

First Name: Fidel Last Name: Castro Program: S ID:82 Year 1

First Name: Charlemagne Last Name: Charlemagne Program: K ID:89 Year 2

First Name: Rajendra Last Name: Chola Program: B ID:85 Year 1

First Name: Thomas Last Name: Churchill Program: C ID:86 Year 1

First Name: Winston Last Name: Churchill Program: O ID:79 Year 2

First Name: Darius Last Name: Darius Program: U ID:86 Year 1

First Name: James Last Name: England Program: W ID:77 Year 1

First Name: Elizabeth Last Name: England Program: D ID:73 Year 1

First Name: Henry Last Name: England Program: M ID:65 Year 1

First Name: Richard Last Name: England Program: V ID:75 Year 1

First Name: Richard Last Name: England Program: L ID:69 Year 1

First Name: Muhammad Last Name: Ghor Program: C ID:66 Year 2

First Name: Alfred Last Name: Great Program: K ID:87 Year 1

First Name: Cnut Last Name: Great Program: O ID:78 Year 1

First Name: Sejong Last Name: Great Program: O ID:70 Year 2

First Name: Herod Last Name: Great Program: M ID:72 Year 1

First Name: Constantine Last Name: Great Program: F ID:67 Year 1

First Name: Che Last Name: Guevara Program: H ID:83 Year 1

First Name: Adolf Last Name: Hitler Program: G ID:69 Year 1

First Name: Ramesses Last Name: II Program: I ID:80 Year 2

First Name: Elizabeth Last Name: II Program: B ID:78 Year 2

First Name: Charles Last Name: II Program: R ID:69 Year 2

First Name: George Last Name: III Program: A ID:76 Year 2

First Name: Edward Last Name: III Program: M ID:77 Year 1

First Name: Shah Last Name: Jahan Program: H ID:89 Year 2

First Name: Mustafa Last Name: Kemal Program: K ID:83 Year 1

First Name: John Last Name: Kennedy Program: P ID:70 Year 1

First Name: Xerxes Last Name: Persia Program: N ID:88 Year 1

First Name: King Last Name: Porus Program: H ID:87 Year 1

First Name: Maharana Last Name: Pratap Program: V ID:89 Year 2

First Name: Bappa Last Name: Rawal Program: J ID:87 Year 2

First Name: Marius Last Name: Rome Program: E ID:75 Year 2

First Name: Theodore Last Name: Roosevelt Program: X ID:72 Year 1

First Name: Solomon Last Name: Solomon Program: S ID:87 Year 2

First Name: Joseph Last Name: Stalin Program: C ID:80 Year 2

First Name: Tipu Last Name: Sultan Program: E ID:68 Year 2

First Name: Mother Last Name: Teresa Program: Q ID:72 Year 1

First Name: Sun Last Name: Tzu Program: C ID:75 Year 1

First Name: George Last Name: VI Program: H ID:72 Year 2

First Name: Henry Last Name: VII Program: V ID:74 Year 2

First Name: Swami Last Name: Vivekananda Program: J ID:75 Year 1

First Name: Otto Last Name: Von Program: A ID:82 Year 1

First Name: William Last Name: Wallace Program: P ID:79 Year 1

First Name: Mao Last Name: Zedong Program: N ID:68 Year 1

Sample output (from console) – case 2

Which case you want to test?

1.Case 1

2.Case 2

2

Now have 10 papers

First Name: Rajendra Last Name: Chola Program: T ID:65 Year 1

First Name: James Last Name: England Program: I ID:81 Year 1

First Name: Alfred Last Name: Great Program: L ID:74 Year 1

First Name: Shah Last Name: Jahan Program: B ID:75 Year 1

First Name: Xerxes Last Name: Persia Program: A ID:72 Year 1

First Name: King Last Name: Porus Program: T ID:65 Year 1

First Name: Bappa Last Name: Rawal Program: P ID:80 Year 2

First Name: Marius Last Name: Rome Program: L ID:80 Year 2

First Name: Tipu Last Name: Sultan Program: U ID:86 Year 1

First Name: Sun Last Name: Tzu Program: Y ID:78 Year 1

Now have 20 papers

First Name: Joan Last Name: Arc Program: P ID:81 Year 1

First Name: Fidel Last Name: Castro Program: D ID:65 Year 1

First Name: Charlemagne Last Name: Charlemagne Program: E ID:69 Year 2

First Name: Rajendra Last Name: Chola Program: T ID:65 Year 1

First Name: James Last Name: England Program: I ID:81 Year 1

First Name: Elizabeth Last Name: England Program: V ID:86 Year 2

First Name: Alfred Last Name: Great Program: L ID:74 Year 1

First Name: Shah Last Name: Jahan Program: B ID:75 Year 1

First Name: Mustafa Last Name: Kemal Program: K ID:72 Year 2

First Name: Xerxes Last Name: Persia Program: A ID:72 Year 1

First Name: King Last Name: Porus Program: T ID:65 Year 1

First Name: Bappa Last Name: Rawal Program: P ID:80 Year 2

First Name: Marius Last Name: Rome Program: L ID:80 Year 2

First Name: Joseph Last Name: Stalin Program: B ID:66 Year 2

First Name: Tipu Last Name: Sultan Program: U ID:86 Year 1

First Name: Mother Last Name: Teresa Program: O ID:87 Year 1

First Name: Sun Last Name: Tzu Program: Y ID:78 Year 1

First Name: Swami Last Name: Vivekananda Program: U ID:68 Year 2

First Name: Otto Last Name: Von Program: H ID:76 Year 2

First Name: Mao Last Name: Zedong Program: N ID:73 Year 2

Now have 30 papers

First Name: BR Last Name: Ambedkar Program: V ID:66 Year 2

First Name: Joan Last Name: Arc Program: P ID:81 Year 1

First Name: Napoleon Last Name: Bonaparte Program: V ID:76 Year 2

First Name: Augustus Last Name: Caesar Program: E ID:82 Year 1

First Name: Fidel Last Name: Castro Program: D ID:65 Year 1

First Name: Charlemagne Last Name: Charlemagne Program: E ID:69 Year 2

First Name: Rajendra Last Name: Chola Program: T ID:65 Year 1

First Name: Thomas Last Name: Churchill Program: B ID:88 Year 1

First Name: Winston Last Name: Churchill Program: R ID:79 Year 2

First Name: James Last Name: England Program: I ID:81 Year 1

First Name: Elizabeth Last Name: England Program: V ID:86 Year 2

First Name: Henry Last Name: England Program: A ID:75 Year 1

First Name: Alfred Last Name: Great Program: L ID:74 Year 1

First Name: Che Last Name: Guevara Program: A ID:69 Year 1

First Name: Adolf Last Name: Hitler Program: D ID:70 Year 1

First Name: Shah Last Name: Jahan Program: B ID:75 Year 1

First Name: Mustafa Last Name: Kemal Program: K ID:72 Year 2

First Name: John Last Name: Kennedy Program: X ID:81 Year 1

First Name: Xerxes Last Name: Persia Program: A ID:72 Year 1

First Name: King Last Name: Porus Program: T ID:65 Year 1

First Name: Bappa Last Name: Rawal Program: P ID:80 Year 2

First Name: Marius Last Name: Rome Program: L ID:80 Year 2

First Name: Joseph Last Name: Stalin Program: B ID:66 Year 2

First Name: Tipu Last Name: Sultan Program: U ID:86 Year 1

First Name: Mother Last Name: Teresa Program: O ID:87 Year 1

First Name: Sun Last Name: Tzu Program: Y ID:78 Year 1

First Name: Swami Last Name: Vivekananda Program: U ID:68 Year 2

First Name: Otto Last Name: Von Program: H ID:76 Year 2

First Name: William Last Name: Wallace Program: B ID:75 Year 1

First Name: Mao Last Name: Zedong Program: N ID:73 Year 2

Now have 40 papers

First Name: BR Last Name: Ambedkar Program: V ID:66 Year 2

First Name: Joan Last Name: Arc Program: P ID:81 Year 1

First Name: Napoleon Last Name: Bonaparte Program: V ID:76 Year 2

First Name: Augustus Last Name: Caesar Program: E ID:82 Year 1

First Name: Fidel Last Name: Castro Program: D ID:65 Year 1

First Name: Charlemagne Last Name: Charlemagne Program: E ID:69 Year 2

First Name: Rajendra Last Name: Chola Program: T ID:65 Year 1

First Name: Thomas Last Name: Churchill Program: B ID:88 Year 1

First Name: Winston Last Name: Churchill Program: R ID:79 Year 2

First Name: Darius Last Name: Darius Program: X ID:65 Year 1

First Name: James Last Name: England Program: I ID:81 Year 1

First Name: Elizabeth Last Name: England Program: V ID:86 Year 2

First Name: Henry Last Name: England Program: A ID:75 Year 1

First Name: Richard Last Name: England Program: M ID:65 Year 1

First Name: Richard Last Name: England Program: J ID:79 Year 1

First Name: Alfred Last Name: Great Program: L ID:74 Year 1

First Name: Cnut Last Name: Great Program: F ID:80 Year 2

First Name: Che Last Name: Guevara Program: A ID:69 Year 1

First Name: Adolf Last Name: Hitler Program: D ID:70 Year 1

First Name: Ramesses Last Name: II Program: X ID:87 Year 1

First Name: Elizabeth Last Name: II Program: R ID:86 Year 2

First Name: George Last Name: III Program: Q ID:65 Year 1

First Name: Shah Last Name: Jahan Program: B ID:75 Year 1

First Name: Mustafa Last Name: Kemal Program: K ID:72 Year 2

First Name: John Last Name: Kennedy Program: X ID:81 Year 1

First Name: Xerxes Last Name: Persia Program: A ID:72 Year 1

First Name: King Last Name: Porus Program: T ID:65 Year 1

First Name: Maharana Last Name: Pratap Program: H ID:66 Year 1

First Name: Bappa Last Name: Rawal Program: P ID:80 Year 2

First Name: Marius Last Name: Rome Program: L ID:80 Year 2

First Name: Theodore Last Name: Roosevelt Program: R ID:69 Year 2

First Name: Solomon Last Name: Solomon Program: Q ID:77 Year 2

First Name: Joseph Last Name: Stalin Program: B ID:66 Year 2

First Name: Tipu Last Name: Sultan Program: U ID:86 Year 1

First Name: Mother Last Name: Teresa Program: O ID:87 Year 1

First Name: Sun Last Name: Tzu Program: Y ID:78 Year 1

First Name: Swami Last Name: Vivekananda Program: U ID:68 Year 2

First Name: Otto Last Name: Von Program: H ID:76 Year 2

First Name: William Last Name: Wallace Program: B ID:75 Year 1

First Name: Mao Last Name: Zedong Program: N ID:73 Year 2

Now have 50 papers

First Name: Gustavus Last Name: Adolphus Program: Y ID:89 Year 1

First Name: BR Last Name: Ambedkar Program: V ID:66 Year 2

First Name: Joan Last Name: Arc Program: P ID:81 Year 1

First Name: Napoleon Last Name: Bonaparte Program: V ID:76 Year 2

First Name: Augustus Last Name: Caesar Program: E ID:82 Year 1

First Name: Julius Last Name: Caesar Program: S ID:88 Year 1

First Name: Fidel Last Name: Castro Program: D ID:65 Year 1

First Name: Charlemagne Last Name: Charlemagne Program: E ID:69 Year 2

First Name: Rajendra Last Name: Chola Program: T ID:65 Year 1

First Name: Thomas Last Name: Churchill Program: B ID:88 Year 1

First Name: Winston Last Name: Churchill Program: R ID:79 Year 2

First Name: Darius Last Name: Darius Program: X ID:65 Year 1

First Name: James Last Name: England Program: I ID:81 Year 1

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First Name: Ramesses Last Name: II Program: X ID:87 Year 1

First Name: Elizabeth Last Name: II Program: R ID:86 Year 2

First Name: Charles Last Name: II Program: D ID:85 Year 1

First Name: George Last Name: III Program: Q ID:65 Year 1

First Name: Edward Last Name: III Program: O ID:88 Year 1

First Name: Shah Last Name: Jahan Program: B ID:75 Year 1

First Name: Mustafa Last Name: Kemal Program: K ID:72 Year 2

First Name: John Last Name: Kennedy Program: X ID:81 Year 1

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First Name: Otto Last Name: Von Program: H ID:76 Year 2

First Name: William Last Name: Wallace Program: B ID:75 Year 1

First Name: Mao Last Name: Zedong Program: N ID:73 Year 2