

Program 1:

Sample Linked List program: The linkList.java Program

```
// linkList.java
// demonstrates linked list
// to run this program: C>java LinkListApp
/////////////////////////////////////////////////////////////////
class Link
{
public int iData; // data item (key)
public double dData; // data item
public Link next; // next link in list
// -----
public Link(int id, double dd) // constructor
{
iData = id; // initialize data
dData = dd; // ('next' is automatically
} // set to null)
// -----
public void displayLink() // display ourself
{
System.out.print("{ " + iData + ", " + dData + " } ");
}
} // end class Link
/////////////////////////////////////////////////////////////////
class LinkList
{
private Link first; // ref to first link on list
// -----
public LinkList() // constructor
{
first = null; // no items on list yet
}
// -----
public boolean isEmpty() // true if list is empty
{
return (first==null);
}
}
```

```

// -----
// insert at start of list
public void insertFirst(int id, double dd)
{ // make new link
Link newLink = new Link(id, dd);
newLink.next = first; // newLink --> old first
first = newLink; // first --> newLink
}
// -----
public Link deleteFirst() // delete first item
{ // (assumes list not empty)
Link temp = first; // save reference to link
first = first.next; // delete it: first-->old next
return temp; // return deleted link
}
// -----
public void displayList()
{
System.out.print("List (first-->last): ");
Link current = first; // start at beginning of list
while(current != null) // until end of list,
{
current.displayLink(); // print data
current = current.next; // move to next link
}
System.out.println("");
}
// -----
} // end class LinkList
////////////////////////////////////
class LinkListApp
{
public static void main(String[] args)
{
LinkList theList = new LinkList(); // make new list
theList.insertFirst(22, 2.99); // insert four items
theList.insertFirst(44, 4.99);
theList.insertFirst(66, 6.99);
}
}

```

```
theList.insertFirst(88, 8.99);
theList.displayList(); // display list
while( !theList.isEmpty() ) // until it's empty,
{
Link aLink = theList.deleteFirst(); // delete link
System.out.print("Deleted "); // display it
aLink.displayLink();
System.out.println("");
}
theList.displayList(); // display list
} // end main()
} // end class LinkListApp
////////////////////////////////////////////////////////////////
```

Here's the
output from linkList.java:
List (first-->last): {88, 8.99} {66, 6.99} {44, 4.99} {22, 2.99}
Deleted {88, 8.99}
Deleted {66, 6.99}
Deleted {44, 4.99}
Deleted {22, 2.99}
List (first-->last):