# <<interface>> BagListInterface

+getCurrentSize(): integer

+isEmpty(): boolean

+add(newItem: T): boolean

+remove(): T

+remove(newItem: T): boolean

+clear(): void

+contains(Item: T): boolean

+toArray(): T[]

#### ArrayBag

- \_bag: T∏

- \_numOfltems: integer

- \_isEmpty: boolean

+getCurrentSize(): integer

+isEmpty(): boolean

+add(newItem: T): boolean

+remove(): T

+remove(newItem: T): boolean

+clear(): void

+contains(Item: T): boolean

+toArray(): T[]

## Graph

- \_vertexArr: ArrayBag<LinkedBag>

+getNumOfVertex(): int

+printVertexes(): void

+addVertex(Character vertex): void

+findVertexIndex(Chracter vertex): int

+addEdges(Character fromVertex, Character

toVertex) void

+ isTargetVertexList

(Character frmVertex, LinkedList

vertex): boolean +clear(): void

+contains(Character: vertex): boolean +toArray(Character vertex): Object [

## LInkedBag

- head: Node

- headVertex: Charracter

- \_numOfItems: integer

- isEmpty: boolean

+getCurrentSize(): integer

+getHeadVertex(): Character

+printList(): void

+isEmpty(): boolean

+add(newItem: T): boolean

+remove(): T

+remove(newItem: T): boolean

+clear(): void

+contains(Item: T): boolean

+toArray(): T[]

#### Node

-\_data: T

-\_next: Node

+getData(): T

+setData(): void

+getNext(): Node

+setData(): void