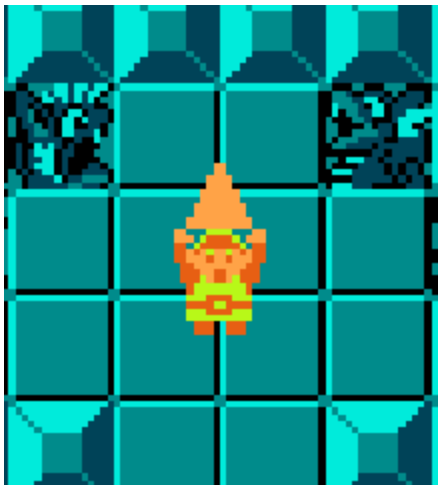
# Project: The Adventures of LinkedList



Just like how Link conquered 8 dungeons to collect fragments of the triforce of wisdom, you too shall go through 8 challenges.

Other than your **Main** file, you should create 2 classes called **LinkedList** and **Node**. Do not use other names. The node should contain a String.

## What are the requirements for the project?

The following are **required** to earn points for the project.

For some methods, you may need to create additional helper methods.
All of these methods should be in LinkedList.java

**insert (35%)**
Create a method called **insert** which inserts a node in alphabetical order. If you have a list with the elements "Cat" and "Frog" then insert "Dog", the updated list would be: Cat, Dog, Frog.

```
public void insert(String text)
```

**print (5%)**
Create a method called **print** which prints everything in the list starting from the beginning.

```
public void print()
```

**contains (5%)**
Create a method called **contains** which takes a search string and returns **True** if found and **False** if not found.

```
public boolean contains(String search)
```

**count (5%)**
Create a method called **count** which **returns** the number of nodes.

```
public int count()
```

**getFirst and getLast (10%)**
Create a method called **getFirst** which returns the **first** string in the list. Also, create a method called **getLast** which returns the **last** string in the list. Return **""** if the list is empty.

```
public String getFirst()
public String getLast()
```

**getShortest and getLongest (10%)**
Create a method called **getShortest** which returns the **shortest** word in the list. Also, create a method called **getLongest** which returns the **longest** word in the list. Return **""** if the list is empty.

```
public String getShortest()
public String getLongest()
```

(There's more...)

**getNth (10%)**
Create a method called **getNth** which gets the string at a certain index. if the list was Cat, Dog Frog. A call to getNth(2) would return "Frog". Return "" if the list is empty or the index is out of range.

```
public String getNth(int x)
```

**merge (15%)**
Create a method called **merge** which takes another LinkedList as a parameter and **inserts** those nodes to your list. If you have a list with "Cat" and "Frog" and you are merging a list with "Aardvark" and "Dog". The list would be "Aardvark", "Cat", "Dog", "Frog". Hint: Use the methods you've already created!

```
public void merge(LinkedList other)
```

**Report (5%)**
In the comments at the top of your code (see Main.java below), answer the following questions:

Based on your code, what is the runtime for each method:
insert:
print:
contains:
count:
getFirst:
getLast:
getShortest:
getLongest:
getNth:
merge:

## How do I submit my work?

**Your project must compile!** Non-compiling projects will get a 0. When you are done, you must upload your code to the **Assignments** area. This must be code files. Do not take pictures of code or email code.

**Projects received 1 minute late are considered late**. Start uploading your project at least an hour before the deadline to avoid a point deduction. If there are any issues with uploading your project, you must **email me before the due date**. Email cguida@pace.edu from your @pace.edu email address.

While I check email regularly, **do not expect a response over the weekend or close to deadlines**.
Late projects will have **10 points deducted per day**. Late projects will **not be accepted after 2 days**.

## Plagiarism, cheating and other ways you will get a 0 on this project:

Your code must be your own code. Do not use Chegg, CourseHero, ChatGPT or any other websites like these. If you watch a YouTube video or other online resource and put in their code, that's not your code. **That is someone else's code**. You will get a 0. Do not share your code or collaborate. **Both** of you will get a 0.

## Help, I'm stuck!

Start the projects early, if you are stuck, **reach out to me** cguida@pace.edu, stop by office hours and make use of the **Seidenberg** tutors for help.

## Starter Code: Main.java

```
/*
  Your Name:  [YOUR FULL NAME]
  Pace Email: [YOUR PACE EMAIL ADDRESS]

Based on your code, what is the runtime for each method:
insert:
print:
contains:
count:
getFirst:
getLast:
getShortest:
getLongest:
getNth:
merge:

*/

class Main {
  public static void main(String[] args) {

    LinkedList list = new LinkedList();

      // Feel free to put in (and leave) your testing code here.

  }
}
```