

Pro Dev Session



Pro Dev Session

You may want to write this down.

Effectively using version control is an essential part of being a developer. You need to learn git well.

Today you will be learning about merge conflicts. Follow the instructions closely and raise your hand if you get stuck. You will use these skills frequently for the duration of the course.

Git Practice

INDEPENDENT PRACTICE

It's time to fly. Focus. Work hard. Ask for help when you need it.

Goals:

- Working with a partner, create a new repository.
- Each partner should clone the repository.
- Partner A should create a branch and on this branch create a new IntelliJ project with a Main class that contains the main method.
- Partner A should add, commit, and push their changes
- Partner B should review the pull request and merge it into master.
- Both partners should use git pull to locally update their master.
- Now both partners should add code to the main method. Any code is fine.
- Partner A should add, commit, and push and merge the changes into master.
- Partner B should pull. What happens? You should see a merge conflict. This is an opportunity to decide which lines of code to keep and which to disregard.
- Watch this [video](#), then work together to resolve the merge conflict.



**20
minutes!**

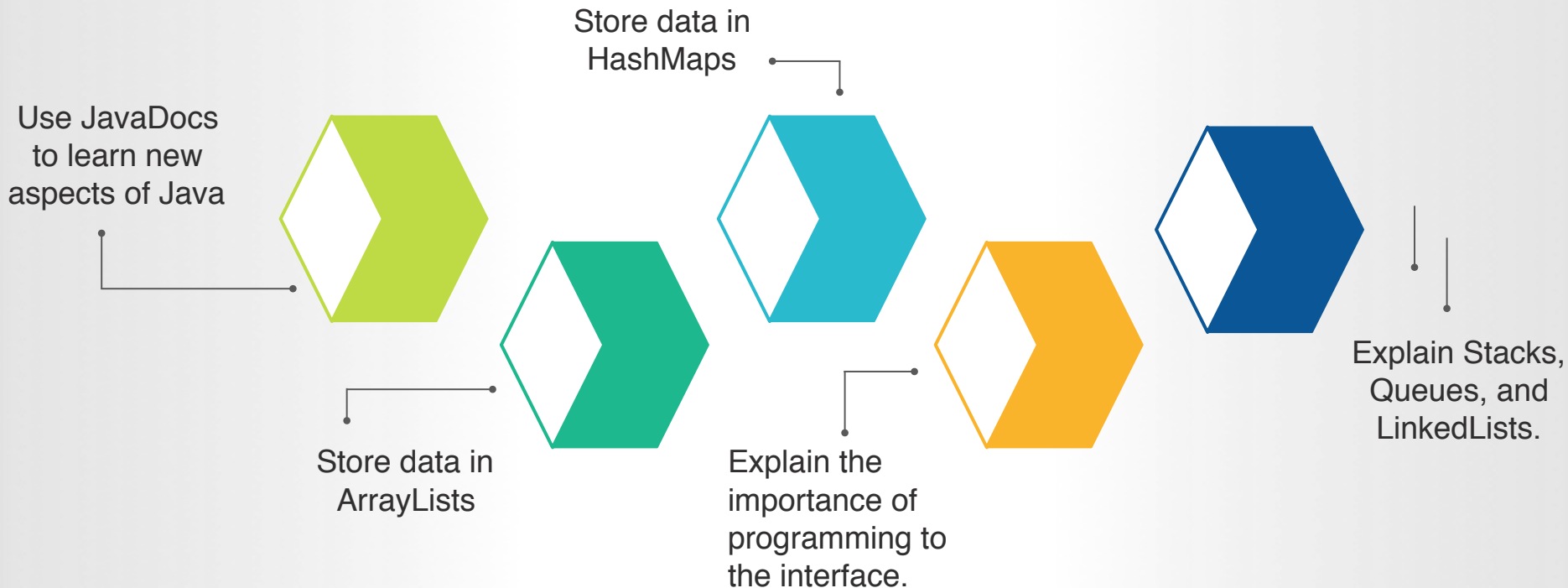
Stand Up



Objectives & Key Outcomes

THE TAKEAWAYS FROM THIS CLASS

By the end of class today, you will be able to:



Review



Stay Seated & Take 3 Deep Breaths.

RELAX.

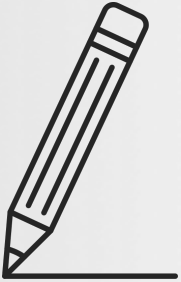
Now take a short walk. Clear your head. After a few minutes break, quickly review your notes.
We'll start back in 10 minutes.



Lists

Lists

DATA STRUCTURES



Notebooks Ready? It's time for a mini lecture.



Lists

DATA STRUCTURES

This module, we've built custom objects to store data.

There are some pre-built objects similar to the custom ones we made for storing data in commonly used ways.

String is one example. Developers often need to store strings of characters, so Java made a String object for us.

Array is another example. Programs often need store lists of things, so Java made an Array object for us.

As you might imagine, there are several other pre-built objects.



Lists

DATA STRUCTURES

Arrays are incredibly convenient, but they have some drawbacks. Imagine you wanted to get all the movies from a database and store them as an array. How big should the array be?

Who knows?

So what can we do...

We have to know the length to declare an array.



Lists

DATA STRUCTURES

List is a Java interface that provides a specification for dynamically sized lists. There are numerous classes that implement the list interface.

Let's take a little detour and learn to read the [Java Documentation](#) and then we'll focus on one specific type of List, ArrayList.



Lists

DATA STRUCTURES

ArrayLists are like arrays with super powers!

Did you see all those methods!?



Lists

WATCH & LEARN

Close your laptop. Eyes on my screen. Pay attention.

```
List<Integer> numList = new ArrayList<>();  
numList.add(3);  
numList.add(4);
```

```
List<Student> stuList = new ArrayList<>();  
stuList.add(new Student("Sam", 3.0));  
stuList.add(new Student("Jessi", 3.8));
```



Check-in Time

Using JavaDoc for reference, how would you:

- Remove all the elements in an ArrayList?
- Check to see if an ArrayList is empty?
- Find the number of elements in an ArrayList?
- Check to see if a specific element is in an ArrayList?
- Turn an ArrayList into an array?



Pair Practice

PAIR PRACTICE

It's time to fly. Focus. Work hard. Ask for help when you need it.

Work in PAIRS to complete all of the goals below.

Goals:

- Create a new class that represents a house.
- Add at least 2 properties, getters, setters, and a constructor.
- Create an ArrayList of houses.
- Add 5 houses.
- Remove the 3rd house.

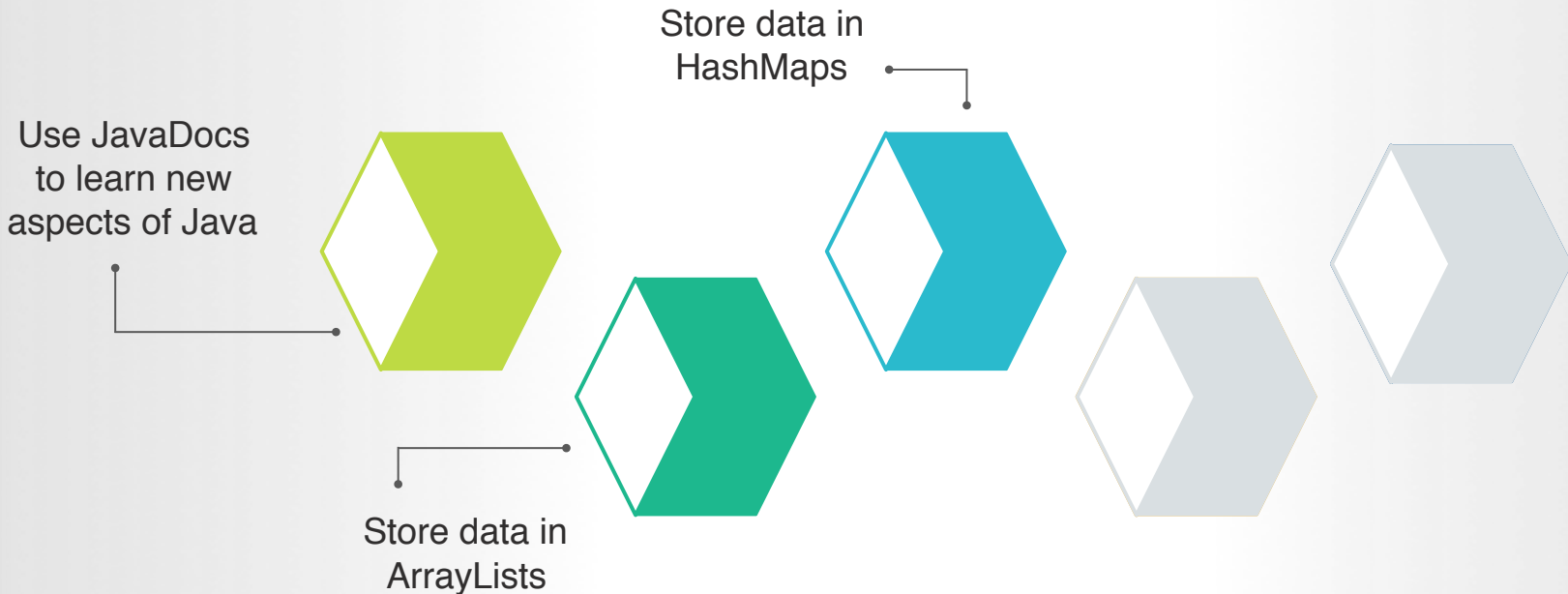


**20
minutes!**

Objectives & Key Outcomes

THE TAKEAWAYS FROM THIS CLASS

By the end of class today, you will be able to:



lunch.

Maps

Maps

DATA STRUCTURES

Maps are a key/value data structure—we store values in the map and associate those values with keys.

This is similar to a coat check: they store your coat in the closet and give you a token with a number that maps to the location of your coat in the closet. When you want your coat, you present your token and they use that to find your coat.

Since the values are accessed by key, the Map interface makes no claim about the order of the values—order doesn't matter in a map. If you need a guaranteed order to your values, you should use a list.



Maps

DATA STRUCTURES

Each key can map to one and only one value and duplicate keys are not allowed. This makes sense if we go back to our coat check analogy: if the coat check token mapped to more than one coat, it would be impossible to keep track of who owned what coat. Similarly, if there are duplicate coat tokens that point to one coat, how do you know who to give the coat to?

The values have fewer restrictions; for example, we can have duplicate values. Going back to the coat check, it is possible that two people have the exact same type and size of coat. We can still check both and we will be able to tell them apart because we have unique coat check tokens (keys).



Pair Practice

PAIR PRACTICE

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Work in PAIRS to complete all of the goals below.

Goals:

- Come up with 2 examples of potential uses for Maps in a real application. Think of facebook, netflix, instagram, gmail, or youtube. What might make sense to store as a map?



5 minutes!

Maps

DATA STRUCTURES

Let's check out [Java Documentation](#) to learn more about Maps.



Maps

WATCH & LEARN

Close your laptop. Eyes on my screen. Pay attention.

```
public static void main(String[] args) {  
  
    Map<String, Integer> heights = new HashMap<>();  
  
    heights.put("Joe", 72);  
    heights.put("Jane", 63);  
    heights.put("Sally", 65);  
  
    int joesHeight = heights.get("Joe");  
    System.out.println("Joe is " + joesHeight + " inches tall.");  
}
```


Pair Practice

PAIR PRACTICE

It's time to fly. Focus. Work hard. Ask for help when you need it.

Work in PAIRS to complete all of the goals below.

Goals:

Using the example just shown:

- Remove the “Joe” entry entirely.
- Update the “Jane” entry to have a height of 57
- Add a new “Ramya” entry with a height of 40

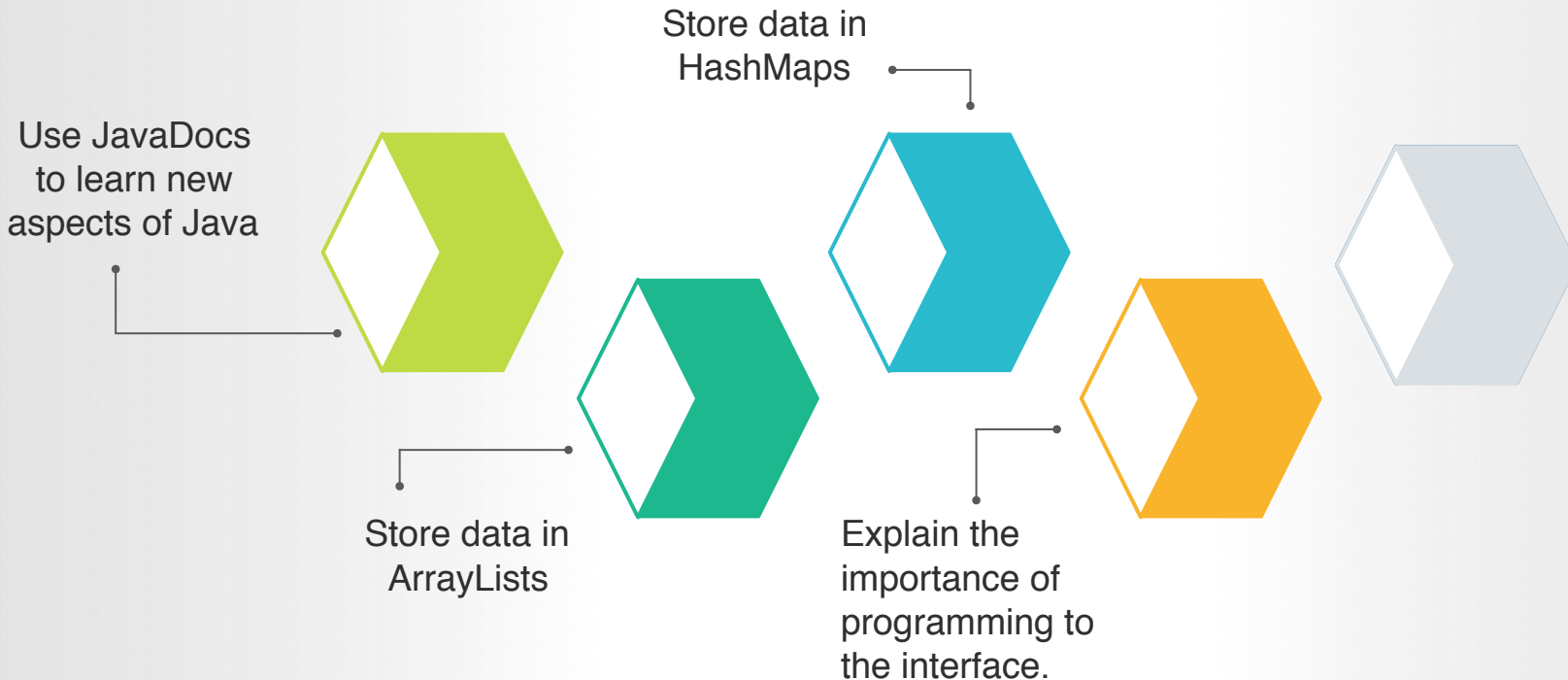


**10
minutes!**

Objectives & Key Outcomes

THE TAKEAWAYS FROM THIS CLASS

By the end of class today, you will be able to:





Stay Seated & Take 3 Deep Breaths.

RELAX.

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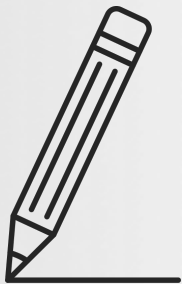


Other Data Structures



Other Data Structures

DATA STRUCTURES



Notebooks Ready? It's time for a mini lecture.



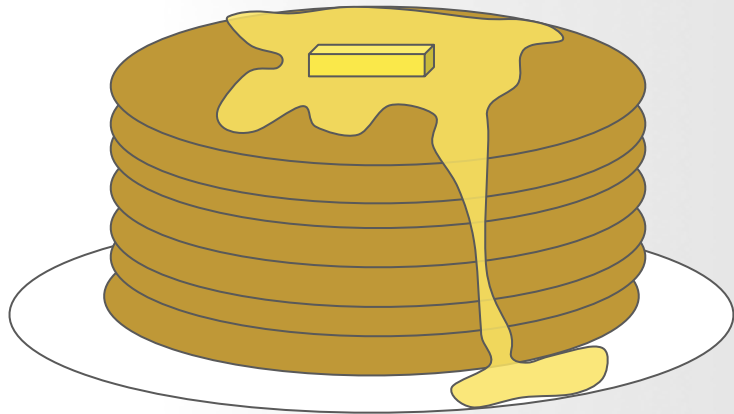
Other Data Structures

STACKS

Stacks are a LIFO (last in, first out) data structure.

Like a stack of pancakes:

You have to eat the last one added before you can eat the second from the last one added. The first pancake added to the plate is the very last one you eat. Last in, First Out.



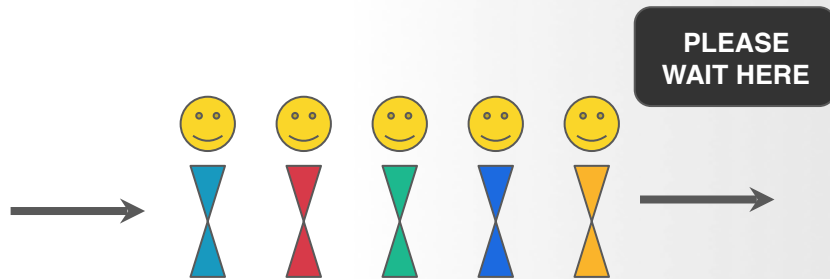
Other Data Structures

QUEUES

Queues are a FIFO (first in, first out) data structure.

Like a queue (or line) at the bank:

The first person in line is the first one the teller sees. Then the second, then the third. The last person in line is the last person helped. First in, First Out.

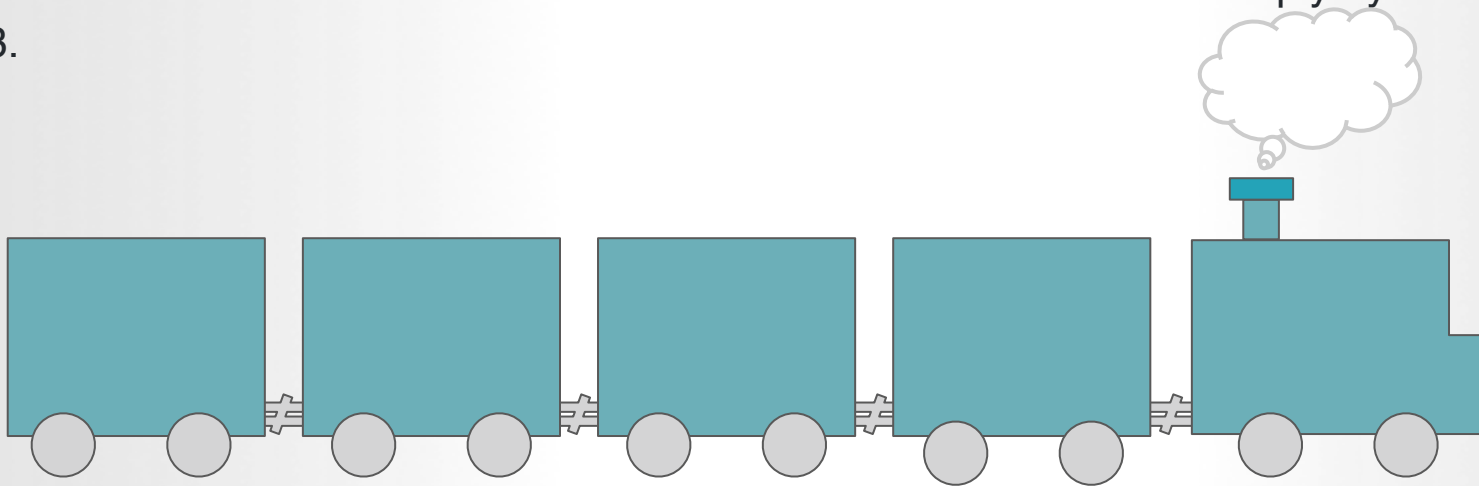


Other Data Structures

LINKED LISTS

Linked Lists are special kind of list that are more efficient for certain operations, namely adding and removing data from the middle of the list.

Linked Lists are like a train. Car 2 can be removed from the train simply by hooking car 1 to car 3.



Pair Practice

PAIR PRACTICE

It's time to fly. Focus. Work hard. Ask for help when you need it.

Work in PAIRS to complete all of the goals below.

Goals:

Using JavaDoc as guidance

- Implement a Stack. Add 4 elements. Without using the get() method, how can you access the second element added?
- Implement a LinkedList. Add 4 elements. How can you access the second element?

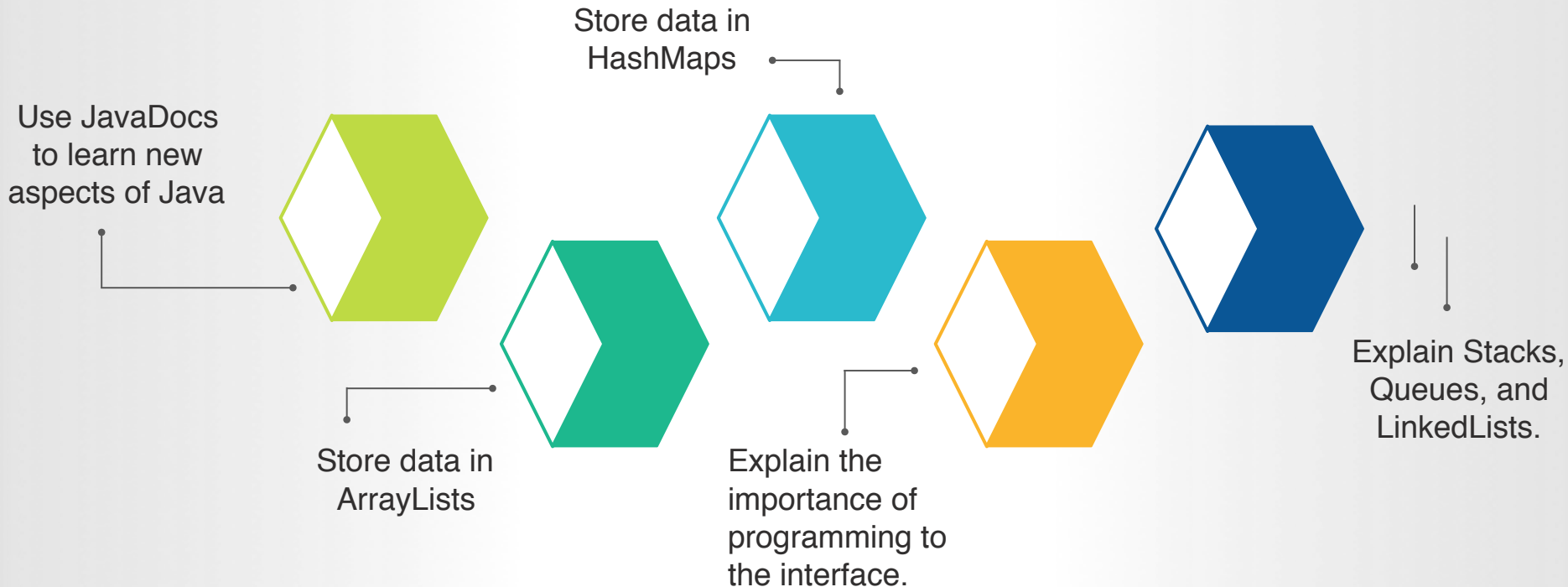


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Study Hall

Module 2 Lesson 1

HOMEWORK

You don't have to submit your nightly homework, but you are expected to complete it.

- Complete the [Learn Python in 60 Minutes from Java](#) video
- Write a revised response to the question “Have you ever worked with Python?”



Mandatory Study Hall

There is no assessment today. Everyone must stay for study hall.



When you work as a developer, you'll work in many technologies and languages. You may often find yourself being interviewed by different team leads to join new projects. You need to know how to pitch yourself as a junior developer with limited experience.

We are currently focussed on Java. Take 30 seconds and think about what you would say if a team lead asked you if you know C#...

What was your answer? Perhaps you thought "No". This is the wrong approach and guarantees you won't be on that project. You just missed an amazing opportunity to learn C# and probably a bunch of other cool things!

In the next activity, you'll explore a different approach to answering this question.



Technical Equivalency Matrix

Take 5 minutes to study [this sample response](#) to an interviewer asking about C# familiarity.

Use the next 5 minutes to formulate your own response to the question “Have you ever worked with Python?”. It may not be perfect but remember that thinking on your feet is an important interview skill.

For the last 10 minutes, share your pitch with your teammates and solicit constructive feedback.

For homework tonight, complete the [Learn Python in 60 Minutes from Java](#) video and write a revised response for each of the above questions based on your new knowledge. You have 2 class days to submit your revised responses for instructional staff review. Note: You are not expected to learn Python. You should be knowledgeable enough to know how to pitch yourself on a Python project.