



JobSeekingNotes.01

Batch 5

{sharing is caring}

Introduce yourself

(First of all, I'd like to thank you for giving me this opportunity and I really appreciate your time)

(My name is thuseyin G, as you can see my resume)

- I've been working in IT industry for about more than 6 years and throughout my career.
- I have domain knowledge in the Comunication and health insurance.
- I have specialized in automation but I was also involved and comfortable in manual and back-end testing.
- I developed my "testing framework" from scratch base on the POM.
- I have specialized in Selenium WebDriver with Java programing lang.
- I developed and worked with Data Driven Development using Apache POI and Scenario Outline in feature file.
|
→ My framework supports BDD. I use Cucumber as a testing tool that supports BDD framework. So, I can define application behaviour using Gherkin language in the feature file to make sure that my test cases are understandable for each member in my team.
- Also, my framework supports Database testing using JDBC.
- Also, I'm familiar REST-API Webservices. I used Rest-assured lib. to make POST, GET, PUT and DELETE calls to perform test CRUD oper.
- I use Jira as bug tracking tool
- And I archive CI and schedule my tests using Jenkins.

Tell me about yourself?

- ① First of all, I'd like to thank you for giving me this opportunity and I really appreciate your time.
 - ② My name is HG, As you can see my resume, I've been working in IT industry for about more than 6 years and throughout my career.
I have domain knowledge in the Communication and health insurance.
 - ③ I have specialized in automation but I was also involved in comfortable in manual and back-end testing.
I have expertise in Selenium with Java programming language, Cucumber, Maven, Jenkins, Jira, SQL ... so on.
 - ④ I have developed and worked with Data-Driven and BehavDD
I developed "testing framework" from scratch base on the POM
 - ⑤ Throughout my career, I worked in different industries, so I am familiar with both Waterfall and Agile environ.
 - ⑥ As far as soft skill concerned, I consider myself,
 - a positive person,
 - who is a quick learner and adaptable to changing circumstances
 - I can work well individually and in a team.
 - I always make sure I meet deadline.
- That's pretty much about myself.

Describe your role?

- As an automation engineer, I developed my "testing framework" from scratch based on the POM.
- I performed various types of testing. Like : functional testing, Smoke testing, Regression testing, Backend testing.
- I am responsible execute Regression test when developers add new functionality to the application or end of the Sprint.
- I am also responsible to check report of Smoke test to make sure that environment is up and running first thing in the morning.
- If there are any issues, I will analyze them
 - If it is service issue, I will immediately contact developers.
 - If it is about my scripts, I will debug my scripts.
 - If it is a bug, I will re-produce it and log the defect.
- I'm using JIRA as bug tracking tool. Once the bug reports were fixed by developers, I retest it and if it is passed, close it. if the defect is not fixed, I re-open it.
- Also, as a part of the Agile-Scrum team, I participate in the several walkthroughs meeting for requirement reviews and provide valuable feedback to the BA.
- Lastly, I'm a cross-functional team member that is always willing to help my team in any way to achieve our sprint goal.

{ that's pretty much about my role as an automation engineer in my current project.

Can you describe your daily activity?

My daily activities at work, I go to work early in the morning and check result report of SMOKE test to make sure that the environment is up and running and the application is stable or not for the day.

If something goes wrong, I will send out email to my team so they can take care of it asap, before everyone comes to work, to reach maximum productivity.

And then I check my email if there are any important tasks or notices,

also I check my schedule if there are any meetings for the day

Then I go to attend daily standup meeting with my scrum team to talk about what [- - -] the meeting takes about 15 minutes.

After that, I go back to my desk and start automating test cases from regression suits.

And also, I automate test case from sprint backlog after doing manually if it is passed.

That's pretty much about my daily activities at work.

Tell me about your framework?

- ① In my framework, I was developing my testing code using Java programming language and Selenium WebDriver.
- ② I used Maven to manage and centralize my dependencies which I have pom.xml.
- ③ My framework was structured based on the POM that every page element go to one class and it makes easy to maintenance and to keep my code organized and clean.
 - Also, I have separate classes where I keep my implemented steps
 - I created other separate folders for my drivers, for my runners and for some useful methods.
- ④ My framework supports Data-Driven testing using Apache POI and scenario outline, also supports Database testing using JDBC driver.
- ⑤ I am using Cucumber with Gherkin keywords in feature file to make sure that my test cases are understandable for each member in my team.
- ⑥ I am using Jira as bug tracking tool.
- ⑦ And I achieve Continuous Integration and schedule my tests using Jenkins.

SDLC

→ Waterfall?

waterfall methodology is the sequential method using for Soft. Development. You can not go back, and have to finish the phase before you move on.

→ Agile - Scrum?

Agile is a flexible methodology using for Soft. Development. You can go back. It keeps on changing. Changing is always welcome.

→ Software Development Life Cycle (SDLC)

SDLC defines the phases in building of software / application.

- ① Project Planning
- ② Requirements Gathering
- ③ Design
- ④ Coding
- ⑤ Testing
- ⑥ Production
- ⑦ Maintenance

→ Software Testing Life Cycle (STLC)

STLC defines the phases in testing of software / application.

- ① Requirements review
- ② Test Planning
- ③ Test Designing
- ④ Test Environment Setup
- ⑤ Test Execution
- ⑥ Test Reporting

(2)

AGILE experience in your most recent project?

- Our sprint is 4 weeks. We have release every 3 sprints as a release cycle.
- We have 10 people in my team; 4 dev, 2 automation 2 functional tester and also 1 scrum master and 1 test lead.
- We start a sprint with Sprint Planning meeting and we learn the part of the application which we are going to developed. We get general idea than we do Sprint Grooming for giving some estimates* for the tasks.
- One sprint start we do Daily Standup Meeting every day morning and we discuss what did we do yesterday, what are we going to do today and is there any blocker. Just we synchroize info about sprint.
- End of the sprint usually we do Sprint Demo. As an SDET in my team, I have done presentation sometimes and go over through the functionalities in the conference room. Client or stakeholders or business people they ask questions what they don't know.
- After Sprint Demo we do Sprint Retrospective meeting. In Sprint Retro we talk about what was good in last sprint, what kind of mistakes we made. We go over them and make sure that we don't make the same mistakes again. If we did something good, we would continue doing it.

This is pretty much our sprint process.

* How do you estimate?

based on my experience and complexity of the story and it is something I worked on before.

→ Test Plan:

Test plan is a word document, that described the testing scope.

- High level test cycle
- Defect life cycle
- Entrance criteria [defines what all need to start the testing]
- Exit criteria [defines when the testing is finished]

******"if you don't know where to start and where to finish then your goals are not clear."

→ Test Case:

Test case describes the functionality and test steps.

- Test Case ID
- Step number
- Description of the functionality
- Expected result
- Actual result.

→ Requirement Traceability Matrix (RTM)

It is used to make sure that all test cases cover the requirement or not. It likes Excel sheet.

→ What is a defect?

When expected result does not match Actual result is a defect.

→ What is the Defect Life Cycle?

- New
- Assigned
- Open
- Fixed
- Retested
- Close

→ What to do when you find a defect?

If I find a defect, before report it I will reproduce the bug that I need to make sure that is valid defect.

If there is small issue I will go to developer desk, and he fix it right there.

If it is big issue I open my Jira and log the defect.

→ If Developer says not a defect, what to do?

I always make sure that it is real defect that's why I reproduce it.

I take screenshots and give all the steps to reproduce the defect.

Actually, One of my biggest challenges that I faced in my current project is that ----

→ When will you Automate?

- if it is taking a lot of manual effort. I run at least once manual and after that I automate it.
- Automation is good for most repetitive functionality.

→ When will you NOT Automate?

- if functionality keeps changing
- if functionality is used only once during the entire project.
- Ad-Hoc test can not be automated.

Some behavioral Questions

(1)

→ Why are you looking for a job?

(Why are you in the market?)

I am looking for a job because my current project is ending soon.
My manager told me I should start looking for new opportunity.

→ How soon can you start?

(When can you start?)

(When do you want to start?)

I can start in 2 weeks after getting offer letter and start date.

→ Can you start tomorrow?

Well, my team won't be happy with me if I leave tomorrow,
but I don't think it is professional and I have never done that
before.

I have to transfer the automation framework knowledge to other team
members before I leave.

→ Why did you apply this position? / Why do you want to work for our company?

After looking at the job description I think it matches my day-to-day
activity and my experience.

I was confident with the job description that's why I applied.

Also, I have done some research on the company and I am
really excited about the company's product and services.

→ If you get hired how long are you planning to stay?

As long as there is a project to work, I am willing to stay
as long as possible.

→ I see so many companies in your resume, why are you changing
job so frequently?

Since all IT projects have start and end date, once project is complete
I had to find another position. That is why there are many companies
on my resume.

Now I worked in different projects. I think it is good think.

Because, I keep my skills up to date.

Some behavioral Questions

(2)

→ Where do you see yourself 5 years from now?

I want to learn as much as possible to be more technical.

I would like to see myself SDET.

I want to be technically very competitive person 5 years from now.

→ Why should we hire you?

I think you should hire the candidate that has the best qualification for this position.

Since I don't know other candidates I can represent only myself.

I think my experience and technical expertise will bring a lot of values and benefits to the company and project. I think that is why you should hire me.

→ What is your weakness?

Well, I think my weakness is that whenever I am given some responsibilities and there is a deadline for it, I work day and night, maybe 7 days a week. This is probably bad for my family life, but I can not sleep unless I am done with my assignments.

→ What is your strengths?

Well, I am a very detail oriented person. I have the sense of urgency. I can prioritize my job according to the deadline.

I am very much dedicated towards my job. I am honest. I have the skills and expertise in QA process.

These are some of my strengths.

→ What do you do If I hire you?

In first week, you know, I will get done all the paper works, getting the machines and necessary access to the project, databases etc.

Then I will have to learn the company culture. I have to learn more about my projects and my teammates. I think, understanding what the project is doing, it is very important if I want to be more productive.

Some behavioral Questions

(3)

→ Describe a challenge you faced during your last project?

- ① I think, one of the biggest challenge that I faced with in my current project is that..
- ② .. everytime I found a bug, the developer disagreed to accept it.
- ③ Most of time, we had to ask BA for clarification.
- ④ Then, I realize the requirement itself was not specific enough so I understood it differently than the developer.
- ⑤ In the sprint retro, I said we should spend more time on requirement clarification because that is the key to the project success.
- ⑥ We did so, and this issue was solved.
- ⑦ I think the most important problem is misunderstanding and lack of communication. If we come together as a group and discuss there is nothing we can not solve.

The challenge I have faced is locating dynamic elements by retrieving right html code from the web pages. Ids were problem sometimes it appears on the page while sometimes it just disappears. Then I had to put either implicit or explicit wait to locate them.

Non-Technical Challenges:

① [what to do in case of you have too much work and you can not finish for the deadline]

When developers don't deploy their code on time, our tester team don't have enough time for completion. And the upper management keeps asking for us for completion.

Some of my team members simply focuses on task completion and not on the test coverage and quality of work.

So, at the Sprint Grooming meeting, I suggested that we should work very closely with the developer and make sure that we are communicating on daily base.

And also, the developers prioritize the important tasks and work on them first. Any scenarios left, would be pushed to the next sprint since it is not as important as the other ones.

Lastly, I try to prioritize my work and follow my test lead and manager whatever they see is more important I start with that.

② One of my recent challenge is that another ~~coworker~~ who is also QA had to leave from company for personal reason, probably he had to go India some Visa issue, and I had to take care of his task with my own since there were only two automation guy, me and Abhinav. And production date can not be delayed.

So I took responsibility, I made myself flexible about addition has to work. I started to made a new plan, and communicated with my SM that I would try my best but I need some help to reach the production goal on time. As always, communication is key to understand each others to the better team work.

And also, developers joined to test application as well.
At the end, we made it on time.

That's one of reason I am proud of to be a member of scrum team. Everybody work for same goal and share responsibility.

→ How do you handle conflict?

Nothing is personal. Everybody thinks company's benefits so I would like to explain my concern and his/her explanation makes sense for me. Of course I can do the things which is most helpfull to my company. So, I try to communicate with his/her and I would try to understand his/her concern. Because, everybody have the same goal and wants to get job done successfully.

How do you handle stress?

One of our sprint my developer deployed code very late time and I didnt have much time to get job done. But I was working so hard worked extra hours and I was finished my task on time.

—11—11—11—11—

One of my team member went to India for emergency purpose and he could not come back again because of his visa issue. We need to take over his task , I had to work extra hours and I had to sleep less and finally I was finish task on time successfully.

—11—11—11—11

Also in scrum enveronment we working as a team. I always maintain good comminication and relationship with my colleagues. So they trust me and they can comminicate with me very easly...

I always avoid miscommunication and my team believe me every time.

—11—11—11—11-

Some times some requirements are not understandable so I try to figure out and I try to undstand the requirements. In the beginning of the application I spend extra effort to understand functionality. Some times it takes time to understand.

What is your biggest Accomplishment:

One of my accomplishments I would say is establishing a great trustworthy relationships within the team. if you are asking for technical : When I joined my last project the application had very less id so I had to spend hours to locate one WebPage elements in my POM project so I communicated with developers and other team members and all together we come up with solution which I got the access to put id in the application by myself. That was great for me it saved my and others time so instead of spending time to locating elements I spend my time to more creating automation test scripts and executing them.

JAVA ✓

(1)

- JVM (Java Virtual Machine) is an abstract machine. It actually runs ^{Java} ~~bytecode~~.
- JRE (Java Runtime Environment) is what you need to run a Java program and contains set of libraries and other files that JVM uses at time of run.
JRE = JVM + library classes
- JDK (Java Development Kit) is what you need to compile java source code and contains JRE, development tools.
JDK = JRE + development tools

→ Object Oriented Programming (OOP)

OOP is a programming language model organized around object rather than actions.

- it makes development and maintenance easier
- it provides data hiding
- it provides ability to simulate real-world.

OOP language must follow 4 principles :

① Encapsulation : We can hide direct access to the data by using private key and we can access private data by using getter and setter methods.

② Abstraction : It is a process of hiding implementation details and showing only functionality to the user. Abstraction, lets you focus on what the object does instead of how it does it.

③ Inheritance : It is used to define the relationship between two classes. When a child class acquires all properties and behaviours of parent class known as inheritance. Child class can reuse all the codes written in Parent class. It provides code reusability.

④ Polymorphism : It is an ability of object to behave in multiple forms. The most common use of Polymorphism in Java, when a parent class reference type of variable is used to refer to a child class object.
For example : `WebDriver driver=new chromeDriver();`
We use method overloading and overriding to achieve Polymorphism.

→ Can you tell me about concept of abstraction?

In OOP, abstraction is a process of hiding the implementation details from the user, only the functionality will be provided to the user.

In other words, the user will have the information on what the object does instead of how it does it.

In Java, abstraction is achieved using Abstract classes and Interfaces.

For example, when you login to your bank account online, you enter your user-id and password and press login, what happens when you press login, how the input data sent to server, how it gets verified is all abstracted away from the you

→ What is difference between Abstraction and Encapsulation?

[Abstraction lets you focus on what the object does instead of how it does it.]

[Encapsulation means hiding the internal details of how the object does something]

[Abstraction is used for hiding the unwanted data and giving relevant data.]

[Encapsulation means hiding the code and data, and to protect the data from outside]

[Abstraction can be achieved by using Abstract class and Interfaces]

[Encapsulation can be achieved by using "private" keyword]

→ What is difference between Abstract Class and Interface.

[A class that is declared with abstract keyword, is known as abstract class]

[It can have abstract and non-abstract methods.]

[An Interface is a blueprint of a class. It is a template!]

[It can have abstract methods, default methods, static methods and public final static variables]

• When we want to use Abstract class, we use "extend" keyword
When we want to use an Interface, we use "implement" keyword.

• Abstract class and interface both are used to achieve abstraction

• Abstract class and interface both can not be instantiated. We can not create an object.

→ What is difference between Polymorphism and Inheritance in Java?

- Like in real world, Inheritance is used to define the relationship between two classes. It's similar to Father-Son relationship. In Java, we have Parent class (also known as Super class) and Child class (also known as subclass). Similar to the real-world, Child inherits Parents qualities, ^{neft} code.
- A Child class can reuse all the codes written in Parent class, and only write code for behaviour which is different than the Parent.
- Inheritance is actually meant for cod-reuse.
- On the other hand, Polymorphism is an ability of Object to behave in ^{multiple} form.
- Polymorphism is classified as overloading and overriding.
- By the way, they are actually related to each other, because its inheritance which makes polymorphism possible, without any relationship between two classes it is not possible to write polymorphic code.

→ Difference between Public, Private and Protected modifier in Java?

In Java, access modifier which specifies accessibility of class, methods ^{and variables}

There are four access modifier in Java namely public, private, protected and default.

The difference between these access modifiers is that:

- the most important difference is the level of accessibility.
 - public is accessible to anywhere
 - private is only accessible in the same class which is declared.
 - default is accessible only inside the same package
 - protected is accessible inside the same package and also outside the package but only the child classes.

* you can not use private or protected modifier with a top level class.

* you should also keep in mind that access modifier can ~~might~~ not be applied for local variable public, private or protected in Java.

*

→ What is the difference between a constructor and a method?

Constructor:> doesn't have a return type and the name of the constructor must be same as the name of the class.

- > constructor is called automatically when a new object is created. constructor is invoked implicitly.
- > The java compiler provides a default constructor if you don't have any constructor

Method:> have a return type and the method name may or may not be same as class name

- > method is invoked explicitly.
- > method is not provided by compiler in any case

> Constructors are not inherited by child classes but methods are inherited by child classes.

→ Difference between method overloading and method overriding?

① First and most important difference between overloading and overriding is that, in case of overloading, method name must be same but parameters must be different; in case of overriding, method name and also parameters must be same.

② Second major difference between method overloading and overriding is that you can overload method in same class but method overriding occurs in two classes that have inheritance relationship.

③ You can not override static, final and private method in Java but you can overload static, final and private method in Java.

④ In method overloading, return type can be same or different.

In method overriding, return type must be same or covariant type.

→ Difference between Set, List and Map in Java? (5)

- Set, List and Map are three important interface of Java Collection framework.
- List provides ordered and indexed collection which may contain duplicates.
Set provides un-ordered collection of unique objects. Set doesn't allow duplicates and, List and Set are both extend Collection interface.

Map provides a data structure based on Key Value. Key is ^{always} unique and value can be duplicate.

→ What is difference between List and Set?

- Most important difference between them is that
 - List allows duplicates and maintain order
 - Set doesn't allow duplicates and doesn't maintain any order.
- List and Set are interface and both extend Collection interface

→ How do you find if ArrayList contains duplicates or not?

- Well, I think, ~~the~~ quick way of checking if an ArrayList contains duplicates or not is to convert that ArrayList into Set. Since Set doesn't allow duplicates. So, when I converted it, set will be smaller than original Array/ArrayList if ArrayList contains duplicates.

```
List inputList = Arrays.asList(input...);  
Set inputSet = new HashSet(inputList);  
if (inputSet.size() < inputList.size()) {  
    return true;  
}  
return false;
```

- for (int i=0; i<input.length; i++) {
 for (int j=0; j<input.length; j++) {
 if (input[i].equals(input[j]) && i!=j) {
 return true;
 }
 }
}

compare each element of Arrey to all other elements and returns true if it finds duplicates.

→ What is the difference between Arrays and ArrayList in Java?

- Array is part of Core Java programming and has special syntax,
ArrayList is part of Collection framework and implement List interface.
- Major difference between Array and ArrayList is that
Array is a fixed length data structure. You can not change length of Array once created.
ArrayList is re-sizeable.
- The other major difference between Array and ArrayList is that
Array can contain both primitives and objects in Java.
ArrayList can only contain objects. It can not contain primitive types.
- Also, We can compare Array and ArrayList on how to calculate length of Array or size of ArrayList. We use `length` for an Array, we use `sized()` method for an ArrayList.

→ What is difference between Hashtable and HashMap in Java?

- Both Hashtable and HashMap implements Map interface and both are store Key and Value.
- HashMap is not thread-safe while Hashtable is a thread-safe collection
- The second important difference is performance since HashMap is not synchronized. It performed better than Hashtable.
→ `Collections.synchronizedMap()`

→ When to use List, Set, and Map in Java?

- If you need to access elements frequently by using index, then List is a way to go.
- If you want to store elements and want them to maintain an order, then go for List again. List is an ordered collection and maintain order.
- If you want to create collection of unique elements and don't want any duplicate then choose any Set implementation. (HashSet...)
- If you store data in form Key and Value then Map is the way to go. you can choose from HashMap, HashTable...

→ Difference between Error and Exception in Java?

(7)

- Both Error and Exception are derived from Throwable in Java.
- Error represent errors which are generally can not be handled.
For examples : Out Of Memory Error, NoClassDefFoundError.
- On the other hand, Exception represent errors which can be catch and dealt.
For examples : IOException, NullPointerException.
- Exception is divided in two categories checked and unchecked Exception.
Checked Exception require a mandatory try-catch code block to handle it.
Unchecked Exception mostly represent programming errors (NullPointerException)
(or Runtime Exception)

→ Difference between RuntimeException and CheckedException in Java?

- Exception are divided in two categories Runtime (also known unchecked) Exception and Checked Exception.
- Main difference between RuntimeException and Checked Exception is that, It is mandatory to provide try-catch to handle checked exception, while in case of RuntimeException this is not mandatory.
- Some of the most common Exception like NullPointerException, ArrayIndexOutOfBoundsException, ClassNotFoundException, IOException.

→ Difference between throw and throws in Java?

Java
Lang.

- throw and throws are two keyword related to Exception feature of Java language.
- throw keyword is used to throw an exception explicitly, on the other hand throws keyword is used to declare an exception which means it works similar to the try-catch block.

```
throw new ArithmeticException ("Arithmetic Exception");
throws ArithmeticException;
```
- if we see syntax wise than throw is followed by an instance of Exception class throws is followed by Exception class names.

```
throw new ArithmeticException ("Arithmetic Exception");
throws ArithmeticException;
```
- throw keyword is used in the method body, while throws is used in method signature to declare the exception.

→ How would you handle exception?

- try-catch blocks is placed around the code that might generate an exception. Every try block should be followed either by catch or finally block.
- the finally block follows a try block or a catch block. Finally block always executes, no matter what happened.
- throws keyword. If a method does not handle a checked exception, the method must declare it using the throws keyword. The throws keyword appears at the end of method's signature.
- throw keyword. You can throw an exception by using the throw keyword inside method body.

→ final is a keyword and used to apply restrictions on class, method variable
(final class can not be inherited, final method can not be overridden and final variable value can not be changed.)

finally is a block and used to place important code, it will be executed whether exception is handled or not

finalize is a method and used to perform clean up processing before object is garbage collected.

→ What is difference between Object and Class?

- Class is a blueprint or template which you can create as many objects as you like.
- Object is a member or an instance of a class.
- Class is declared using class keyword,
- Object is created through new keyword mainly.

StringBuffer and StringBuilder

- 1) StringBuffer is synchronized, StringBuilder is non-synchronized
 - 2) StringBuilder is more efficient than StringBuffer.

Constructor

`StringBuilder()` → creates an empty string with the initial capacity of 16.

`StringBuilder(String str)` → creates a string Builder with the specified string.

`StringBuilder(int length)` → creates an empty string with the specified capacity as length

Methods

```
StringBuilder str = new StringBuilder("Hello");
```

`str.append("Java"); // original string is changed. → prints Hello Java` ^{→ added end.}

`str.replace(1, 3, "Java"); //
 ↓shift ↘depl.` → prints > H Java lo
 0 1 2 3 4

`str.delete(1,3); //` → prints > Hlo

str. reverse(); // → prints > olleH

→ //reverse string

```
String str = "Hello";
String reversed = "";
for(int i = str.length() - 1; i >= 0; i--) {
    reversed += str.charAt(i);
}
System.out.println(reversed);
```

Important String Methods

`length()`

`charAt()` index int

`indexOf()`

`substring()` int beginIndex, int endIndex

`toLowerCase()`

`toUpperCase()`

`equals()`

`equalsIgnoreCase()`

`startsWith()` String prefix > gives boolean

`endsWith()` String suffix > gives boolean

`contains()` String str. > gives boolean

`replace()` char old, char new

`trim()`

`split()` > gives Array

Array

```
int [] arry = { 6, 9, 1 } ;
```

→ arry.length

→ Arrays.sort(arry); // import java.util.Arrays

We use arrays class

→ Java also provides a convenient way to search. but only if the array is already sorted.

Arrays.binarySearch(arry, value); // will give index number of value.

→ String [][] many = new String [3][2];

→ Arrays.asList(arry);

→ Arrays.toString(arry);

→ Arrays.deepToString(arry); // for multidimensional Array.

ArrayList

```
ArrayList list = new ArrayList();
```

→ list.add(^{object});

→ list.add(index position, ^{object});

→ list.remove(^{object});

→ list.set(index position, newobject); // replace object.

→ list.isEmpty(); > boolean

→ list.size();

→ list.clear(); // clear all objects.

→ list.contains(^{object});

→ list.get(^{index});

→ list.toArray();

Sorting

Collections.sort(list);

SELENIUM

(1)

→ What is Selenium and what is composed of?

Selenium is a suit of tools for automated web testing.

It is composed of:

- ① Selenium IDE, a firefox plugin that works for recording and playing back
- ② Selenium RC, is a test tool and it used to work on JavaScript to automate the web applications.
- ③ WebDriver, is a web automation framework and ^{that allows you to execute} your tests in different browsers.
- ④ Selenium Grid, allows tests to run in parallel across multiple machines.

→ Selenium 1.0 or Selenium RC → 2004

→ Selenium 2.0 or Selenium WebDriver → 2011

→ Selenium 3.0 → 2016

→ What are advantages of Selenium?

- Selenium is open source and free to use without any licensing cost.
- It supports multiple languages like Java, ruby, python...
- It supports multi browser testing.
- ✓ It has good amount of resources and helping community..
- ✓ It supports many operating systems like Windows, Mac, Linux..

→ What are disadvantages of Selenium?

- Selenium supports only web based applications, does not support windows based applications.
- Selenium needs third party tools for report generation activity.
- Selenium does not support file upload facility.

→ What are limitations of Selenium?

- We can not test desktop application using Selenium
- We can not test Web services using Selenium.
- We have to use external libraries and tools for performing tasks like testing framework (TestNG, JUnit), reading from external files (Apache POI for excel).
- Automating Captcha is not possible using Selenium

→ Implicit wait vs Explicit wait ?

(2)

- Implicit wait is a type of wait which waits for a specified time while locating an element before throwing "NoSuchElementException".
→ As by default selenium tries to find elements immediately without any wait. So, it is good to use implicit wait. This wait applied to all elements of the current driver instance.
- Explicit wait is a type of wait which is applied to a particular web element until the ExpectedCondition specified is met.
- Implicit wait, if condition is met before the timeout, it will continue to next step, if condition is not met within timeout throw "NoSuchElement" exception.
- Explicit wait, if condition is met before timeout, it will continue to next step, if condition is not met within timeout, throw "TimeoutException" failed.
- `driver.manage().timeouts().implicitlyWait(5, TimeUnit.SECONDS);`
- `WebDriverWait wait = new WebDriverWait(driver, 5);`
`wait.until(ExpectedConditions.visibilityOf(element));`

→ What are expected conditions that can be used in explicit waits?

• `visibilityOf(element)`, `elementToBeClickable(element)`, `alertIsPresent()`

→ What are some commonly encountered exceptions in selenium?

- ① `NoSuchElementException` —
- ② `ElementNotVisibleException` —
- ③ `NoAlertPresentException` —
- ④ `TimeoutException` —
- ⑤ `WebDriverException` —

→ What are various ways of locating an element in Selenium? (2)

① Id ② Name ③ ClasName ④ Xpath ⑤ css selector ⑥ linkText ⑦ partialLinkText
⑧ tagname

→ What is XPath?

- XPath is used to find the location of any element on a webpage using ^{start} HTML

→ What is difference between single slash (/) and double slash (//) in XPath?
(")
Absolute XPath and Relative XPath ")

- Absolute XPath starts with single slash (/), starting from root element and all the way to the element.
- Relative XPath starts with double slash (//), starts selection matching anywhere in the document.

→ Syntax for XPath?

// tagname [⑧ attribute = 'value']
select current node ↓ current node select attribute ↓ attribute name of the node ↓ value of the attribute

→ How do you handle dynamic elements? - I'm using some methods.

- contains() → //*[contains(⑧ name, 'btn')]
- start-with() → //label [starts-with(⑧ id, 'message')]
- text() → //td [text() = 'UserID']
- OR & AND → //input [⑧ type = 'submit' AND ⑧ name = 'btnLogin']

→ How can we move to parent element using XPath?

- Using (...) expression in XPath we can move to parent element.

→ How can we move to nth child element using XPath?

- There are two ways:- Using square brackets with index position
For ex: div[2] will find the second div element

- Using position() method.

For ex: div [position()=2] will find the second div element

(4)

→ What is difference between Xpath and CSS selector?

- with Xpath, we can search elements backward or forward ~ while CSS works only in forward direction.
- Xpath can work with text, CSS can not work with text.
- XPath has more combination and can search by index CSS can not search by index. But CSS is working faster than Xpath.

→ Explain the difference between close and quit command?

- driver.close() - used to close the current browser
- driver.quit() - used to close all the browser instances

→ What is Selenium Framework?

(5)

Selenium framework is a code structure that helps to make code maintenance easy, code readability and code reusability.

There are mainly 3 type of frameworks created by Selenium WebDriver to automate test cases:

- Data Driven Framework
- Keyword Driven Framework
- Hybrid Framework

→ Data Driven Framework

- Data Driven Framework is one of the popular automation framework in the market.
- All of our test data is generated from some external files like Excel (or scenario outline in feature file.) (or TestNG Data Provider) (or connect with Database)
- Selenium WebDriver is a great tool to automate web-based applications. But it does not support read and write operations on excel files. Therefore, we use third party APIs like Apache POI.

→ Keyword Driven Framework

- Keyword driven testing is a scripting technique that uses data files to contain the keywords related to the application being tested.
- keywords are written in some external files like excel file and java code will call this file and execute test cases.

→ Hybrid -Driven Framework

- a combination of the DDF and KDF is commonly said to be HDF.
- both the test data and test action are kept in external files.

Drop down

```
WebElement dd = driver.findElement(By.id("dropdown"));  
Select dropdownlist = new Select(dd);
```

methods

- getAllSelectedOptions() // get()
- getOptions()
- SelectByVisibleText("...")
- SelectByIndex(^{int}...);
- SelectByValue("...");

Alert

```
Alert alert = driver.switchTo().alert();  
alert.accept();  
alert.dismiss();
```

switchTo() iframe

← or index.

```
driver.switchTo().frame("...");
```

```
driver.switchTo().defaultContent();
```

switchTab

```
public static void switchTab(WebDriver driver, String title) {  
    for (String windowHandle : driver.getWindowHandles()) {  
        driver.switchTo().window(windowHandle);  
        if (driver.getTitle().equals(title)) {  
            break;  
        }  
    }  
}
```

Actions

Action action = new Action (driver);

action . build ()

- perform ()
- doubleClick ()
source
element , target
element
- drugAndDrop ()
- hoverOver ()
↓ target.
- moveToElement (element)

TestNG

→ Annotations :

- ② Test (priority = 0) • (enable = false)
- ③ BeforeTest ④ AfterTest
- ⑤ BeforeClass ⑥ AfterClass
- ⑦ BeforeSuite ⑧ AfterSuite
- ⑨ BeforeMethod ⑩ AfterMethod

Junit :

- ② Test
- ③ BeforeClass
- ④ AfterClass
- ⑤ Before
- ⑥ After
- ⑦ ignore

→ What is the differences between Junit and TestNG

- Annotations
- Both of them is testing framework to help us running automation scripts
- TestNG provid Html report
- TestNG has ⑨ Dataprovider annotation same as cucumber scenario outline for data driven testing
- In TestNG you can do parallel testing but Junit does not support to parallel test so we use sourcelab for that.
- TestNG support group test but Junit does not support.
- TestNG and Junit both of them have parameterize testing but TestNG parameterize test configuration is very easy to configure
There are two ways to achieve parameterization in TestNG
 - ⑩ Parameters and TestNG xml file
 - ⑪ DataProvider

→ Cross Browser and Parallel Test

- In my current project, we use soucelab for cross browser testing
But my previous project I used testng.xml file.
Basically, inside the suite there are 3 keys (name, thread-count, parallel)
And I created 2 different tests, one of them is for chrome and other one is for Firefox.
There is also parameter annotation and include name and value;
name is browser and value is Chrome.

```
!<suite name="Test Suite" thread-count="2" parallel="tests">
  <test name="ChromeTest">
    <parameter name="browser" value="Chrome" />
    <classes>
      <class name="....." />
    </classes>
  </test>
  <test name="FireFox">
    <parameter name="browser" value="Firefox" />
    <classes>
      <class name="...." />
    </classes>
  </test>
</suite>
```

AWS

AWS is providing cloud VM. Create an EC2 instance. I can use this instance with remote desktop. Actually, after launch my instance I just use like a regular computer.

What is the base page?

We store our common functionalities in a base class and later we extend that base class and use in other class

Trevor

API

App. Prog. Int.

vs Web services

(1)

Selenium WebDriver, JDBC, Apache POI
 ↓ browser ↓ Database ↓ MS Office

if an API uses internal for communication
 it is a webservice
 ★ All webservices are API, but not all APIs are webservices.

API / Webservices

- no UI. (web application with UI and we use selenium webdriver)

- we use:

SOAP → XML

REST → JSON, XML, TEXT

Postman, Rest Assured Library

→ Name some of commonly used HTTP methods used in REST based Architecture?

Create → POST

Read → GET

Update → PUT

Delete → DELETE

→ What is API?

- API is the acronym for Application Programming Interface [which is (software) intermediary] that allows two applications to talk to each other.

STATUS CODES

1XX → Informational

2XX → Success
(request was accepted successfully)

3XX → Redirection

4XX → Client Error

5XX → Server error

✓ 200 → OK

201 → Created

202 → Accepted

✓ 204 → No Content

✓ 400 → Bad Request

401 → Unauthorized

403 → Forbidden

✓ 404 → Not Found [service is down or URL is bad]

405 → Method not allowed

API/Webservices with RestAssured Library

→ `import static io.restassured.RestAssured.*;`

→ `URI uri = new URI("...../methods");` get, post, all ..

→ `GET`

Response `response = given().accept(ContentType.JSON)`
`when().get(uri);`

`response.then().assertThat().statusCode(200)`
`.and().assertThat().contentType(ContentType.JSON);`

→ `POST`

Response `response = given().contentType(ContentType.JSON)`
• `with().accept(ContentType.JSON)`
• `and().body(jsonbody)`
• `when().post(uri);`

`response.then().assertThat().statusCode(200);`

→ `import static org.hamcrest.Matchers.*;`

↳ `then().assertThat().body("Id", Matchers.equalTo(123));`

→ `JsonPath json = new JsonPath(jsonbody);`

↳ `json.getString("key");`

↳ `json.getInt("key");`

↳ `json.getList("key1+key2");`

WAS

`XmlPath xml = new XmlPath(xml);`

API

?

There are 2 types of Authentication

- Basic
- Pre-emptive

SERIALIZATION / DESERIALIZATION

(when we map a Java object to API JSON format)

Serialization : Java object (POJO, BEANS) → MAP IT TO API JSON / XML

Deserialization : API JSON / XML → Map it to Java object

Serialization : When you have an Object from a class and MAP it to a JSON format in your RESTful API.

```
{ make : "Toyota"
  model : "Camry"
}
```

```
Car car = new Car();
car.setMake("Toyota");
car.setModel("Camry");
given().body(car).when().post(uri);
```

De serialization :

```
Car car2 = new Car();
car2 = when().get(uri).body().as(car.class);
car2.getMake() → "Toyota"
car2.getModel() → "Camry"
```

* POJO = Plain Old Java Object

API

→ What is the Endpoint?

<protocol>://<service-name>/<ResourceType>/Resource ID → URL
Base URL / resource ? Parameters (Uniform Resource Identifier)

How cool it is !

(http://www.google.com / search ? source=book...)

query parameters

→ How do you verify a value in your Response body?

(for ex: verify ID contains correct number)

① Hamcrest Matcher that is assertion library.

```
then().assertThat().body("Id", Matchers.equalTo(123));
```

② Parse into JsonPath and use ~~get, getFirst, getMany, getOne, getValues, getWithDefault~~ methods.
to read Id value.

And, I can use JUnit Assertion:

```
String body = ...thenReturn().body().asString();
JsonPath json = new JsonPath(body);
assertEquals(123, json.getInt("Id"));
```

③ De-serialize into a (POJO) object (or Object Mapping)

(Pojo) myPojo =when().post(url).
thenReturn().body().as(Pojo.class);

↳ assertEquals(123, myPojo.getId());

(And, I can use JUnit Assertion)

API

5

→ There are 2 types of Authentication

• Basic

→ Pre-Emptive

- If a service is configured to be pre-emptive, It will not request credentials from a client - even though it requires it.
- If a request does not contain credentials, it will return 401 Unauthorized status code.

→ Challenged

When request reaches the API then API will tell that it requires credentials. Then Client will provide credentials

• Digest

→ is more encrypted than basic

→ https

RESTful Web Service /API Interview Questions

(6)

→ What is REST and RESTful?

- REST stands for Representational State Transfer.
- RESTful is referred for web services written by applying REST architectural concept are called RESTful service.
- In RESTful, webservice http methods like GET, POST, PUT, DELETE can be used to perform CRUD operations

→ What is difference between SOAP and RESTful web services?

- RESTful supports JSON, XML, TEXT
SOAP supports only XML
- REST is faster than SOAP based web services.

→ How do you verify a value in your Response body? ↗
sayfa 4

→ What is endpoint? ↗
sayfa 4

→ What is HTTP Basic Authentication and how it works? ↗
sayfa 5

→ What is API? ↗
sayfa 1

→ Name some of commonly used Http methods used in REST based architecture
↗ sayfa 1

→ Which protocol is used by RESTful web services?

- RESTful web services use of HTTP protocol as a medium of communication between client and server.

→ What is URI? Purpose and format?

- URI stands for Uniform Resource Identifier.
- The purpose of URI is to locate a resource on the server hosting the web service.
- A URL is of the following format
`<protocol>://<service-name>/<ResourceType>/<ResourceID>`

~~SQL~~

How can we connect db?

1

Java API

MySQL 5.7
Oracle 11G

JDBC driver

- `java.sql`, `java.x.sql`

Connection
(interface)

Statement
(interface)

ResultSet
(interface)

connection = `DriverManager.getConnection(url, user, pass)`

statement = `connection.createStatement()`

resultSet = `statement.executeQuery("query")`

resultSet.close();
statement.close();
connection.close();

After connection

DatabaseMetaData db = `connection.getMetaData()`;

After resultSet.

ResultSetMetaData rs = `resultSet.getMetaData()`;

~~Failure to connect will throw an exception:~~

- SQLException (bad url or credentials)
- ClassNotFoundException (JDB driver not in classpath)

Versions

- ✗ Java 8 → 2014 - present
- ✗ Java 7 → 2011 - 2014
- ✗ Java 6 → 2006 - 2011

Selenium 3.5.3

SQL Review ②

RDBMS : Relational Database Management System.

Data is organized into tables that are related to each other.

- How are they related?

Primary key and foreign key.

Primary key : unique and not Null

Foreign key : duplicate, null.

- What type database system you have exper. with?

RDBMS. such as MySQL and Oracle

Database schema?

- it is like a diagram with all tables and column names, datatypes and PK, FK and how tables are related to each other.

SQL?

- Structured Query Language. used for managing and manipulating data in db

What are constraints?

- properties that table column must comply with.

Columns have constraints that defined how data can be stored.

PK → unique, not null

PK → null, duplicated, can not add data which is not in PK

unique key → only unique value

null → can have null

not null → can not have null

- NULL
- NOT NULL
- UNIQUE
- PK
- FK

Data types in SQL?

- Number(9)

- Integers

- char → Bob
char(20) : 20 spaces are taken from memory, you used only 5

- varchar → Smith
varchar(30) : 5 spaces from memory.

varchar2

- boolean

- date

- currency

DML vs DDL

DML : Data Manipulation Language.

DML command actions can be restored.

DML commands are :

- SELECT from tablename; (read)
- INSERT into tablename values (----); (add)
(keys)
- UPDATE tablename SET value WHERE location;
- DELETE from tablename WHERE location; (rows)

DDL : Data Definition Language.

DDL commands actions can not be restore / undone.

DDL commands are :

- CREATE table tablename (column1, column2...);
- ALTER table tablename modify value;
- TRUNCATE table tablename; (delete whole table data)
- DROP table; (delete whole table with structure)

PL/SQL functions and Triggers in Oracle?

- A trigger is triggered automatically when a DML statement is executed.
- There are 2 types functions :
 - Procedure (like a void method in java)
 - Function (like a non-void method in java)
(return)

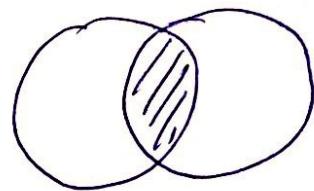
SQL Reviews

4

JOIN / INNER JOIN

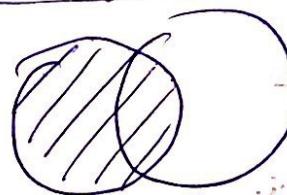
- (INNER) JOIN is used when retrieving data from multiple tables and will return only matching data

```
SELECT employee-id, department-id
FROM employees JOIN departments
ON e.department-id = d.department-id;
```



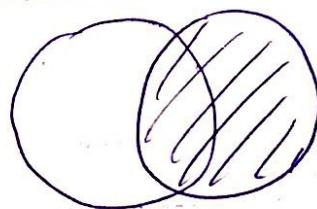
LEFT (OUTER) JOIN

- LEFT (OUTER) JOIN is used when retrieving data from multiple tables and will return left table and any matching right table records



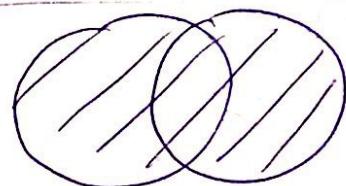
RIGHT (OUTER) JOIN

- RIGHT (OUTER) JOIN is used when retrieving data from multiple tables and will return right table and any matching left table records



FULL (OUTER) JOIN (only Oracle)

- FULL (OUTER) JOIN is used when retrieving data from multiple tables and will return both tables records, matching and non-matching



UNION

- union combines the resultsets of two queries

1 select column-names
from table-name
+ UNION
2 select column-names
from table name

SQL Review

(5)

① How to find top 3 high paid employees?

[in MySQL] * oracle has ROWNUM

```
use hr;  
SELECT salary, first-name, last-name  
FROM employees  
ORDER BY salary DESC  
LIMIT 3
```

② How to find duplicate names in employees?

```
SELECT first-name, COUNT(first-name)  
FROM employees  
GROUP BY first-name  
HAVING (COUNT(first-name) > 1);
```

③ How to find employees whose salaries are below the average?

```
SELECT first-name, salary  
FROM employees  
WHERE salary <= (SELECT AVG(salary) FROM employees);
```

④ How to find maximum salaries in each department?

```
SELECT first-name, MAX(salary)  
FROM department d LEFT OUTER JOIN employee e  
ON (d.department-id = e.department-id)  
GROUP BY department-id;
```

⑤ How to find second highest salary of employee? (without LIMIT)

```
SELECT MAX(salary)  
FROM employees  
WHERE salary NOT IN (SELECT MAX(salary) FROM employees);
```

Maven Project

► src/test/java

- ▷ com.myproject.pages → HomePage.java, SearchPage.java...
- ▷ com.myproject.runners → CukesRunner.java
- ▷ com.myproject.step-definitions → Hook.java, LoginTestStepDef.java...
- ▷ com.myproject.utilities → Driver.java

► src/test/resources

- ▷ drivers → chromedriver
geckodriver.
- ▷ features → test.feature
- ▷ test-data → configuration.properties

Excelutils.java

DBUtility.java

ConfigurationReader.java

► JRE System Library

► Maven Dependencies

► Referenced Libraries

► .

► .

► target

- ▷ cucumber-reports
- ▷ generated-test-sources
- ▷ maven-status
- ▷ surefire-reports
- ▷ cucumber.json

lpm.xml

POM.XML

```
<project ...>
  <modelVersion>4.0.0</modelVersion>
  <groupId>com.myProject</groupId>
  <artifactId>MyProject-uat</artifactId>
  <version>0.0.1-SNAPSHOT</version>

  <properties>
    <maven.compiler.source>1.8</maven.compiler.source>
    <maven.compiler.target>1.8</maven.compiler.target>
  </properties>

  <dependencies>
    <dependency>
      <groupId>org.apache.poi</groupId>
      <artifactId>poi-ooxml</artifactId>
      <version>3.16</version>
    </dependency>
    :
    cucumber-java
    cucumber-junit
    selenium-java
  </dependencies>

  <build>
    <plugin>
      - maven-compiler-plugin
      - maven-surefire-plugin
        <configuration>
          <testFailureIgnore>true</testFailureIgnore>
        <includes>
          <include>**/*CukesRunner.java</include>
        </includes>
      </configuration>
    </plugin>
  </build>
</project>
```

Runner Class

```
package mypackage;  
import cucumber.api.CucumberOptions;  
import cucumber.api.junit.Cucumber;  
import org.junit.runner.RunWith;
```

② RunWith (Cucumber.class)

③ CucumberOptions (

```
    plugin = {"pretty", "html:target/cucumber-reports",  
              "json:target/cucumber.json"}
```

```
    features = "src/test/resources/features",
```

```
    glue = "com/myproject/step-definitions",
```

```
    tags = "@smoke",
```

```
    dryRun = false
```

```
)
```

```
public class CukesRunner { }
```

Cucumber
** in Jenkins: Command-Line
mvn test -Dcucumber.options="--tags @smoke"

Pages

```
package mypackage;
```

```
public class mypage {
```

```
    public myPage() {
```

```
        PageFactory.initElements(driver, this);
```

```
}
```

→ Driver.getInstance()

④ FindBy (css=....)

```
public WebElement myelement;
```

feature file

Feature: Withdraw Money from ATM

Scenario: A user withdraws money from an ATM

Given Eric has a valid credit or debit card → Describes the preconditions and initial state
 And his account balance is \$100
 When he inserts his card → describes actions
 And withdraws \$45
 Then the ATM should return \$45 → describes the outcome resulting from actions
 And his account balance is \$55

* In some cases, we want to test multiple scenarios at once to perform Equivalence partitioning and boundary-value analysis:

Scenario Outline: A user withdraws money from an ATM

Given <Name> has a valid credit or debit card.
 And their account balance is <OriginalBalance>
 When they insert their card
 And withdraw <WithdrawalAmount>
 Then the ATM should return <WithdrawalAmount>
 And their account balance is <NewBalance>

Examples:

Name	OriginalBalance	WithdrawalAmount	NewBalance
Eric	100	45	55
Gaurav	100	40	60
Ed	1000	200	800

→ at runtime the scenario is run against each row in the table. Column values are substituted for each of the named placeholders in the scenario.

```
public class MyStepDefs {
```

② Given ("(.*) has a valid credit or debit card")

```
public void hasCard (String name) {
```

```
}
```

```
;
```

```
}
```

Hook

```
public class Hook {
```

② Before

→ import cucumber.api
(Runs before a scenario)

```
public void setup () {
```

```
Driver.getInstance().manage.timeouts().implicitlyWait (5, TimeUnit.SECONDS);
```

```
}
```

② After → import cucumber.api
(Runs after a scenario)

```
public void tearDown (Scenario scenario) {
```

```
if (scenario.isFailed ()) {
```

→ import org.openqa.selenium

```
final byte[] screenshot = ((TakesScreenshot) Driver.getInstance()).  
getScreenshotAs (OutputType.BYTES);
```

```
scenario.embed (screenshot, "image/png");
```

```
}
```

```
Driver.closeDriver();
```

```
}
```

.Configuration.properties

url = http://myproject.com

browser = chrome

chrome.driver.path = ./src/test/resources/drivers/chromedriver

username =

password =

Cucumber

Cucumber is a testing tool that supports BDD framework, It defines application behaviour using Gherkin lang in the feature file

Excel

Data Driven Testing with Excel

org.apache.poi > 3.16

FileInputStream ex = new FileInputStream(path);

XSSFWorkbook wb = new XSSFWorkbook(ex);

XSSFSheet es = wb.getSheet("sheetName");

{ XSSFCell cell = es.getRow(rownum).getCell(column);

XSSFRow row = es.getRow(rownum);

cell = row.createCell(column);

cell.setCellValue(value);

FileOutputStream fo = new FileOutputStream(path);

wb.write(fo);

fo.close();

```
3 public class UniqueChars {  
4     public static void main(String[] args) {  
5  
6         String str = "jsdgdbvaaannndfnkvifobfpp";  
7         String unique = "";  
8         for (int i = 0; i < str.length(); i++) {  
9             if (!unique.contains(str.charAt(i) + "")) {  
10                 unique += str.charAt(i);  
11             }  
12         }  
13     }  
14     System.out.println(unique);  
15 }  
16 }  
17 }
```

```
3 public class SwapValues {  
4     public static void main(String[] args) {  
5         int a = 10;  
6         int b = 4;  
7  
8         b = a + b; // 14  
9         a = b - a; // 4  
10        b = b - a; // 10  
11  
12    }  
13 }
```

```
7 // reverse word
8
9 String str = "abcdefghz";
10 String reversed = "";
11
12 for (int i = str.length() - 1; i >= 0; i--) {
13     reversed += str.charAt(i);
14 }
15 System.out.println("====revers string====");
16 System.out.println(reversed);
```

```
18 // reverse sentence
19
20 // 1. way
21 String sentence1 = "hey my name is osman";
22 StringBuilder strgbuldr = new StringBuilder(sentence1);
23 StringBuilder reverse = strgbuldr.reverse();
24 System.out.println(reverse);
25
26 // 2. way
27 String sentence2 = "hey my name is osman";
28 String revrs = "";
29 for (int i = sentence2.length() - 1; i >= 0; i--) {
30     revrs = revrs + sentence2.charAt(i);
31 }
32 System.out.println(revrs);
33
34 }
35 }
```

```
11 // how to get max number from array?  
12 int[] intArr = { 74, 8, 12, 25, 56 };  
13 Arrays.sort(intArr);  
14 System.out.println("min of array: " + intArr[0]);  
15 System.out.println("max of array: " + intArr[intArr.length - 1]);  
16  
17 // the other way:  
18  
19 List<Integer> list = Arrays.asList(74, 8, 12, 25, 56);  
20 Collections.sort(list);  
21 System.out.println("min of array: " + list.get(0));  
22 System.out.println("max of array: " + list.get(list.size() - 1));  
23 }  
24 }
```

```
19 // 5!=120=3
20 int fct2 = 1;
21 for (int i = 5; i > 0; i--) {
22     fct2 = fct2 * i;
23 }
24
25 String factstr = String.valueOf(fct2);
26 String[] spt = factstr.split("");
27 Integer i1 = Integer.valueOf(spt[0]) + Integer.valueOf(spt[1]) + Integer.valueOf(spt[2]);
28 System.out.println(i1);
29 System.out.println("5!=" + fct2 + "=" + i1);
--
```

```
7 public class CompareTwoArray {  
8     public static void main(String[] args) {  
9  
10         int[] num1 = {12,23,2,78};  
11         int[] num2 = { 2, 12, 23, 78 };  
12  
13         Arrays.sort(num1);  
14         Arrays.sort(num2);  
15  
16         Assert.assertArrayEquals(num1, num2);  
17  
18         // binary search:  
19         Arrays.sort(num1);  
20         Arrays.binarySearch(num1, 23);  
21  
22         // how to add value in array?  
23         int[] score = { 5, 56, 23, 70, 3 };  
24  
25         score=Arrays.copyOf(score, 7);  
26  
27         score[5] = 54;  
28         score[6] = 34;  
29     }  
30 }
```

```
5 // What is the angle between minute and hour hands when time is 6.30?
6 public static int angle(int hour, int minute) {
7
8     if (hour >= 0 && hour <= 12) {
9         int hourmove = (hour * 30) + ((minute * 6) / 12);
10        int angle = (hourmove - minute * 6);
11
12        if (angle < 0) {
13            angle = angle * -1;
14        } else if (angle > 180) {
15            angle = 360 - angle;
16        }
17        return angle;
18
19    } else {
20        System.out.print("Invalid time. Try an other one!");
21        return 0;
22    }
23 }
```

```
3④ import java.net.HttpURLConnection;⑤
11
12 public class BrokenLinks {
13
14④     public static void main(String[] args) {
15         WebDriver driver = new FirefoxDriver();
16         driver.manage().window().maximize();
17         driver.get("http://www.google.co.in/");
18
19         List<WebElement> links = driver.findElements(By.tagName("a"));
20
21         System.out.println("Total links are " + links.size());
22
23         for (int i = 0; i < links.size(); i++) {
24             WebElement ele = links.get(i);
25             String url = ele.getAttribute("href");
26             verifyLinkActive(url);
27         }
28     }
29
30④     public static void verifyLinkActive(String linkUrl) {
31         try {
32             URL url = new URL(linkUrl);
33             HttpURLConnection httpURLConnect = (HttpURLConnection) url.openConnection();
34             httpURLConnect.setConnectTimeout(3000);
35             httpURLConnect.connect();
36
37             if (httpURLConnect.getResponseCode() == 200) {
38                 System.out.println(linkUrl + " - " + httpURLConnect.getResponseMessage());
39             }
40             if (httpURLConnect.getResponseCode() == HttpURLConnection.HTTP_NOT_FOUND) {
41                 System.out.println(linkUrl + " - " + httpURLConnect.getResponseMessage() + " - "
42                                 + HttpURLConnection.HTTP_NOT_FOUND);
43             }
44         } catch (Exception e) {
45         }
46     }
47 }
```

```
3 public class ArrayCalculator {  
4  
5     /*  
6      * int[] array = { 1, 2, 67, 35, 65, 99, 22, 78 }; write a function which will  
7      * take int array as input and prints two numbers in that array whose sum  
8      * equal to 100? if there are more than 1 pair, print all. 1,99 22,78  
9      */  
10    public static void main(String[] args) {  
11        int[] array = { 1, 2, 67, 35, 65, 99, 22, 78 };  
12        calculate(array);  
13    }  
14  
15    private static void calculate(int[] array) {  
16        // loop through the array  
17        // i will the first number we are adding  
18        for (int i = 0; i < array.length; i++) {  
19            // j will be second number  
20            for (int j = i + 1; j < array.length; j++) {  
21                // take one number from array and add it to the next  
22                int sum = array[i] + array[j];  
23                // if the sum 100  
24                if (sum == 100) {  
25                    // I will print those two numbers  
26                    System.out.println(array[i] + "+" + array[j] + "=" + sum);  
27                } else {  
28                    }  
29            }  
30        }  
31    }  
32 }
```

```
9 // EvenOddNumberPrint
10 Scanner scan = new Scanner(System.in);
11 System.out.println("pls give number:");
12 int number = scan.nextInt();
13
14 if (number % 2 == 0) {
15     System.out.println(number + " is even number");
16 } else {
17     System.out.println(number + " is odd number");
18 }
19 // -----
20 int[] numbers = { 12, 3, 4, 6, 8, 9, 1, 78 };
21 for (int printnumber : numbers) {
22     if (printnumber % 2 == 1) {
23         System.out.println("odd number: " + printnumber);
24     }
25 }
26 // -----
27 for (int i = 0; i < 103; i++) {
28     if (i % 2 == 0) {
29         System.out.println("even num :" + i);
30     }
31 }
32 }
33 }
```

```
8
9 public class TextRead {
10    public static void main(String[] args) throws FileNotFoundException {
11        String listen="listen";
12        String silent="silent";
13
14        char[] listenArr=listen.toCharArray();
15        char[] silentArr=silent.toCharArray();
16
17        Arrays.sort(silentArr);
18        Arrays.sort(listenArr);
19
20        for (int i = 0; i < silentArr.length; i++) {
21            if(silentArr[i]!=listenArr[i]){
22                System.out.println("It is not an anagram");
23                break;
24            }else{
25                if((i==silentArr.length-1) && (silentArr[i]==listenArr[i])){
26                    System.out.println("Yes, this is a anagram");
27                    break;
28                }else{
29                    continue;
30                }
31            }
32        }
33    }
34}
```

```
3 public class MostFrequent {
4
5=    public static void main(String[] args) {
6        //String str = "aaabbddfffffdggsgdghhhhhhhhhhhhhhhfdgfh reyrjfdfshgfdhf
7        String str="aaaabbccc";
8        int length = str.length();
9        char ch = 0;
10       int count = 0;
11       int max = 0;
12       for (int i = 0; i < length; i++) {
13           count = 0;
14           for (int j = 0; j < length; j++) {
15               if (str.charAt(i) == str.charAt(j)) {
16                   count++;
17               }
18               if (count > max) {
19                   max = count;
20                   ch = str.charAt(i);
21               }
22           }
23       }
24   }
25   System.out.println("Character is " + ch + "\nCount is " + max);
26 }
```

Console

<terminated> MostFrequent [Java Application] C:\Program Files\Java\jre1.8.0_144\bin\javaw.exe (Sep 25, 2017, 10:35:07 PM)

Character is a
Count is 4

1 Airplane ticketing problem
2 Write a program that assigns seats on an airplane. It should ask whether the customer wants economy or business class. The airplane has 20 economy seats and 4 business seats.
3 Depending the answer, your problem should assign the seat.
4 Seat structure
5 5 rows
6 4 seats on each row
7 Then it will print the seat number.
8 Then ask the next customer the same question and go through the same process. If there are not seats available, it should ask the customer if the customer wants to change to another class. But only ask the question if there is a seat available on the different class. If customers says yes, assign the seat and print number. If no, just print no seats available.
9 If customer does not want to change, just print no seats available.
10
11 1. A B C D
12
13 2. A B C D
14 3. A B C D
15 4. A B C D
16 5. A B C D
17 6. A B C D

```
10    if business
11        check if any business seat is available
12            if available
13                assign the seat
14            else if not available and economy is available
15                ask for change
16                    if yes
17                        assign seat
18                    else
19                        say have a nice day
20            else if not available and economy is not available
21                say have a nice day
22        else
23            check if any economy seat is available
24                if available
25                    assign the seat
26                else if not available and business is available
27                    ask for change
28                        if yes
29                            assign seat
30                        else
31                            say have a nice day
32                else if not available and business is not available
33                    say have a nice day
34
```

```
select E.first_name, E.salary from employees E
join departments D on E.department_id = D.department_id
join locations L on D.location_id = L.location_id
where E.salary > (select max(salary) from employees E
                    join departments D on E.department_id = D.department_id
                    join locations L on D.location_id = L.location_id
                    where L.city = 'Toronto')
and L.city <> 'Toronto';

select max(salary) from employees E
                    join departments D on E.department_id = D.department_id
                    join locations L on D.location_id = L.location_id
                    where L.city = 'Toronto';
```

```
select * from regions;  
#having salary > 5000;  
  
select E.first_name, E.phone_number, L.city, C.country_name,  
R.region_name, R.region_id, E.job_id from employees E  
join departments D on E.department_id=D.department_id  
join locations L on D.location_id = L.location_id  
join countries C on L.country_id = C.country_id  
join regions R on C.region_id = R.region_id  
where R.region_name='Europe'  
and E.job_id != 'SA_REP';
```

I

```
select E.first_name, E.salary from employees E  
join departments D on E.department_id = D.department_id
```

```
select job_title from JOBS
where job_title NOT IN
(select j.job_title from employees e
join jobs j on e.job_id = j.job_id
where e.first_name = 'Bruce');
```

```
select j.job_title from employees e
join jobs j on e.job_id = j.job_id
where e.first_name = 'Bruce';
```

Versions

8-10 → Selenium 3.5.0 (August 10, 2017)
(license → Apache License 2.0)

Selenium 1.0 or Selenium RC) 2004
Selenium 2.0 or Selenium Webdriver) 2011
Selenium 3.0) 2016

8-10 → Java SE 7 (July 28, 2011)

Java SE 8 (March 18, 2014)

6-10 → API

Java SE 9 (Sept 21, 2017)

7-10 → SQL

→ Maven 3.5.0 (April, 2017)

Maven 2 (until → 2014)

7-10 → Cucumber 1.3.15 (May, 2014)

→ TestNG 6.11 (feb, 2017) (-)

↳ esklusive?

→ JUnit 5.0.1 (October 3, 2017)

→ Jenkins 2.82 (Oct. 1, 2017) [starts before 2011]

→ Git 2.14 (Sept. 22, 2017) [starts before 2011]

→ Jira 6.4 (- 2017) [starts before 2011]

→ MySQL 5.7.19 (July 2017)

→ Oracle DB 11G (2008), 12C (2013 → present)

→ org.apache.poi 3.16

→ Postman 5.3.0 (Oct 6 2017)