RECAP:What is an API?

- Application Programming InterfaceWhat is a web service?

- it is an also an API that is accessible over the webWhat is 3 tier client-server architecture?Presentation layer

-\*(API/Web service is here)\*- application layer(logic/code) - database layer(data layer)

What is JSON?

JavaScript Object Notation  
is file standard format that is readable by humans and machines that translate and transmit dataIs JSON a programming language? No it is not

{  
    “key” : “value”,  
    “key” : “value”}What is CRUD?

Create  
Retrieve  
Update  
Delete

What are some HTTP methods?

POST - creating data  
GET - retrieving data  
PUT - updating a complete record  
PATCH - partially updating a record  
DELETE - deleting data

What do I need if I want to make a POST call?  
1. URI

what is a URI?  
URI = Base URL/Domain URL + resource/endpoint/web service URL

2. Headers  
Content-Type –

what type of request are you making?

What format are you sending your request in?  
Authorization - JWT using keyword ‘Bearer’  
3. Payload/body - information we are sending in JSON format

What do I need if I want to make a GET call?  
1. URI  
2. Headers  
No payload - we are just retrieving data

What do I need if I want to make a PUT call?  
1. URI  
2. Headers  
3. Payload  
What do I need if I want to make a PATCH call?  
1. URI  
2. Header  
3. Payload - only send partial payload

What do I need if I want to make a DELETE call?  
1. URI  
2. Headers  
3. We may or may not need a payload  
If we dont need a payload, what can we assume?  
we may have to add parameters to the URI2 tier client-server architecture?

what are cookies? - a more formal way of calling them is HTTP cookies

JSON Web Token AKA JWT “JUT”JWT is used for Authorization NOT Authentication

When we log in to an application, if our credentials are correct then we will be authenticated. When this happens, our credentials are stored in the servers memory, and our credentials are stored in a cookie that our computer will use while we are on the application which will have a Session ID

So everytime we make a request(meaning we click on a different tab/page within the application) the cookie will be sent to the server, then the server will check the server memory and will see if the cookie information matches, remember the cookie has a session ID which has our credentials that we used to log in - this is how the server knows its us (if this information was not stored in the server memory we would have to keep logging in)With JWT - simple. Nothing is stored in server memory instead the server will provide us with a JWT which means we were authenticated and with every request we make we need to send the JWT with it, this is the only way the server will be able to know its usOAuth 2.0

Framework -----------------------------OAuth –

Open Authorizationin OAuth 2.0 there are 4 different grant types

1. Authorization Code Grant Type - JWT  
   2.Implicit grants  
   3.password grants  
   4.Client credentials grants
2. Task 1: Explain cookies and how authentication/authorization works in a same session - explain what happens if your information was not stored in the servers memory
3. Task 2: Explain how JWT works
4. Task 3: Explain the OAuth 2.0 framework

Is JSON a programming langugae? No it is notwhat is CRUD?IT IS AN ACRONYM for   
CREATE  
RETRIEVE  
UPDATE  
DELETEWHAT ARE SOME HTTP METHODS?  
Post-creating data  
get-retrieving data  
put-updatinga complete record  
patch-partially updating a record  
delete-deleting a datawhat do I need if I want to make a POST call?  
1 URI;  
WHAT is a URI=BaseURL/domain URL+Resource/endpoint/webservice URL2.HEADERS;  
what do we specify in the headers? Content-type= what type of request are you making?what format are you sending in?  
Authorization-JWT . Using keyword 'Bearer'3.PAYLOAD/BODY;information we are sending in JSON formathow do me make a GET call?  
1.URI  
2.HEADERS  
No PAYLOAD. Because are just retrieving datahow do I make a PUT call?  
1.URI  
2.Headers  
3.Payloadhow do I a make PATCH call?  
1.URI  
2.HEADER  
3.PAYLOAD—only send particular payloadhow di I make a delete call?  
1.URI  
2.HEADERS  
3.we may or we may not need a payload?  
If we dont need a payload what can we assume?  
We may have to add parameters to the URI2 TIER CLIENT SERVER 1 TIER CLIENT SERVER ARCHITECTURE means that presentation layer,Application layer, data layer are in the same machine. All of them are on the same machine. Like a desktop application(Excel,calculator.etc) no need an internet connection.What are cookies? - small piece of data that are used by websites to track your browsing activity.they are mainly used for advertisement purposes. When you start browsing to buy something online,you ll most like to see some advertisements. These websites stores the cookies on your computer. When cookie stired on your computer,your computer has a unique ID. When you visit the website again,website knows who you are uniquely. They have other functions as well othen than tracking your browser activity.  
Cookies also have the capability of being able to store your log in information. These website are leaglly obligated to ask you for your permisson or tell you that they are collecting informations for cookies.  
More formal way of calling them is HTTP cookies.JSON Web Token as known as JWT  
JWT is used for Authorization not authenticationAuthentication,you are bascially taking username and password and making sure that these credentials are correct and if those credentials are correct,the you are authenticated to be alogged in user.if you try to login a webpage with invalid credentials and not able to log in ,you wont be authenticated.Only when you logged in with valid credentials,you ll be authenticated.Authorizations is making sure that,that user is who they say they are,not someone else. Once you have been authenticated,  
if you go and click on any tab,a reqest is sent to the that webpage server. Server needs to authorize it,need to check if you have the authority to request that information. The way that server does that is called "SESSION ID". Session id are being stored with the cookies along with your credentials at Server Memory.(if this information was not stored in the server memory,we would have to keep loggin in)  
Then request are being send back. You have been authenticated(means Home page will be displayed).  
Whenever you want to sent another request(The cookie with your seesionID which has your authentication credentials is sent as well with the request),once the request hits the server,the server is goint to check into the server memory which already have your stored session ID and is goint to see that if this cookie with your session ID matches.when they match,you ll be authorized to see that information. JSON WEB TOKEN  
lets say we have the credentials to generate a token. Once our request hit the server,server is gonna generate a JSON webtoken. When we authenticate ourselves with the server,Server is not going to store our credentials in Server memory.nothing is going to be stored in the server memory.once we have been authenticated ,server will send JWT as a response. From now on, with every request we make , needs to be sent with the JWT(json web token).This is the only way the server will be able to know it is us.This is the difference between the Cookies between the session diagram. We are not using UI. We re using webtoken for authentication. Since nothing is going to be stored in the server memory, we have to sent our request with the JSON web token.otherwise ,we will not be authoruzied OAUTH 2.0 fRAME WORKOauth- Open Authorizationthe industry standard protocol for authorization. It gives the developers the flexibility to be very simple, and integrating this authorization with applications(web,mobile or desk applications). It is a very simple design.In OAauth 2.0 there are 4 different grant types.  
1.authorization code grant type=JWT  
2.implicitm grants  
3.password grants  
4.Client credentials grantsin this example we created an application(Expense Tracker). Our customer (vikkie)wanted to link her bank account to the application.once she tries to link the account, a request made from expense tracker to the bank.After the bank receives the request,bak asks vikki to log in,when she logs in,she will get a question like" Do you authorize chase bank to provide your information to Expense tracker" .  
Once the customer(vikkie) click yes(which customer has to enter the credentials to log in), we are making a request to the Chase Bank authorization server. Chase bank will responds to expense tracker with a grant access key(spesifically for the customer) that Expense tracker need to use to request a token from the BankAuthorization server again.Once that request hit Chase bank server,Chase bank authorization server will respond with an access token that we will have to use to make calls to the resource server where customer(vikki)'s bank information is stored.But before all of this can happen, we need to register our application with the bank API service. When we do that, we send our name of the application(expense tracker),website information,call back URL. Once the registration is good with the Bank authorization server,then bank authorization server  
will respond witha set of credentials which includes a client ID,  
resource ID,public unique ID.   
This diagram needs to take place first and it only happens once between the application and the Server.when application registers the server,now we can use the corresponding application server for all of our users.