LOWES INTERVIEW:

About Lowes:
Lowes is an American retail home improvement company.
CEO – Marvin Ellison
Products & Services –
Home services like flooring, fencing, windows, appliances(kitchen, bathroom

INTERVIEW 1

  1. INTRODUCE YOURSELF
Hi, I am Harini, I am from Andhra Pradesh. I graduated from JNTUA university Andhra Pradesh. I have totally 4.6 years of experience in IT industry where I worked in cognizant Technology Solutions from 2010 to 2015
I worked as an ETL developer in Informatica Power center under Datawarehouse technology with UHG United Health Group client .
So, back in 2015 April, I had to resign my job for the marriage proposal. I got married and moved to US with my husband under H4 dependendent visa.
I couldn't work there with that visa.
During my break time, I slowly started learning Java since it is open source, Soon I developed interest with Java technology and became passionate to learn more and excel in that area.
Now I am able to build small applications, rest services using Spring Boot framework. And I am eager to start with big projects enterprise wise.
I expect and request Lowes to put me under Java technology so that I can excel and render my knowledge in Java.
My biggest strength is I am a fast learner and very confident to learn new things and get myself adaptable to any environment.
That's all about myself. Thank you.

  2. You worked in CTS as ETL developer in UHG, tell me about your domain ?
UnitedHealth Group is an American Healthcare and insurance company which offers health care products and insurance services.
It provides health care coverage, software, and data consultancy services. It operates through the following segments:
UnitedHealthcare, OptumHealth, OptumInsight, and OptumRx.
The UnitedHealthcare segment utilizes Optum's capabilities to help coordinate patient care, improve affordability of medical care, analyze cost trends, manage pharmacy benefits, work with care providers more effectively, and create a simpler consumer experience. It takes care of the healthcare ie. Insurance business
The OptumHealth segment provides health services business serving the broad

health care marketplace, including payers, care providers, employers, government, life sciences companies, and consumers.

The OptumInsight segment focuses on data and analytics, technology, and information to help major participants in the health care industry.

The OptumRx segment provides pharmacy care services.

The company was founded by Richard T. Burke in January 1977 and is headquartered in Minneapolis, MN

Note: Optum is UnitedHealth's technology-focused arm which is a part of UHG. Optum develops and maintains all the products and services required by UHC   1

3. Tell me about how you implemented ETL in your projects ?

ETL process in the projects:

I totally worked in 3 projects in 4.6 years in UHG where the work totally focused on Processing and Validating the Claims and information of Customers , insurers, providers

Sometimes migrating the data between organizations in case of merger and acquisition.

I would analyze the requirements, come up with design documents, mapping document and start developing ETL related mappings, sessions, workflows, and implemented ETL process

Using Informatica tool and loaded the transformed data into the target DW based on SCD type 1 or 2 or 3 load as per the specifications. The load will be on daily basis or monthly based on the project requirement.

4. Explain the projects you worked in CTS

Project 1 : Optum Health IPRO UPGRADE   [May 2013 - April 2015]

The International classification of Diseases ICD 10 is a medical classification list by WHO .

In this project the DiagCodes and the Proc codes were changed to ICD 10 from ICD 9 codes

The internal/external direct data is obtained from the Nextgen as a source and we perform transformations and load into the IPRO upgrade tool along with the changes incorporated for the Diag and Proc codes as ICD 10 .

Project 2: CCR DataMigration   [Nov 2012 - April 2013]

Deals with Group and Benefit data

Sources from RxClaims, Phbit, Northfield, IFMS databases and Eligibility files

Target: DW landing zone with RxCCR Staging tables —> pulled by Pega tool into RxCCr system

Group Data:

In Group insurance plan, the insurance plan is given for a group of members or employers in an organization,

Example: HMO, PPO

Benefit Data: the list of healthcare services , the plan is covered and the maximum cost , it will cover.
Patient/Subscriber information
Group number
Group Name
Plan/Product
Current Effective Dates
Copayment
Deductible
Out of Pocket maximum
Coinsurance
Limitations
Preauthorization

Project 3: Optum Rx FS   [Feb 2011 - Oct 2012]
Fresh Start : It is the new project to migrate or accommodate the FS carrier claim data (the external PBM services)) to the already existing EDM DataWarehouse with PSI Carriers data.
This migration involves ETL process . Type 2 SCD

Majorly dealing with Health insurance Claims data with the below fields:
Claims Data:
ClaimType
ProviderName
DiagCode
DiagDesc
SourceDiagCode
SourceDiagDesc
ProcCode
ProcDesc
Serviceate
PaidAmount

5. What challenges you faced during your work time and how did you resolve those?
Data volume is the major issue . While loading I ensure not to load the duplicated, inconsistent data and perform few querying to optimize the load performance using sql related transformations
Such as joins, aggregations in Informatica.

6. ETL Implementation Process:
— Generally any Business organization strive to acheive growth in revenue, strength, organization etc.,

Any business generate huge amount of data from various sources (inside the organization, social trends, market research, customer feedback etc),
and by analyzing these data, any business can gain better insights leading to its growth.
— Who needs Business insights?
Business executives, business analysts need these data , better strategies, decisions and implementations can be made
— Problems in achieving insights
The data collected from various sources and stored in different applications cannot be directly visualized (through graphs, plots, reports, dashboards)
This data must be integrated and then processed as required before visualization takes place.
— Business Intelligence :
The perfect solution to achieve business insights
BI is a set of techniques and tools used to gather data from different sources and store into a DW. (Data integration)
This data is used for various analytical purposes and making it easier for end business users to understand this data.
— In BI, to achieve data integration, there are different processes like Data modeling, data warehousing, data profiling, Data cleansing, ETL or ELT.
Among these, ETL is the most preferred effective process followed by many organizations.
 — ETL :
Extract, Transform, Load is a process of extracting data from various sources, transforming the data as per the requirements and loading into the target DW
— DW
A DW is a single, complete and consistent store of data , obtained from various sources and made available to the end users(business analysts, users etc)
 in a way they understand and use it in business context.
A DW helps business executives to organize, analyze and use the data for decision making
DW types –
  1. Information Processing DW – for basic querying, basic statistical analytics, reporting using cross tabs, charts, tables etc
  2. Analytical Processing DW – for OLAP data with summary data using pivots, slice& dice, pull up, pulls–down
  3. Data Mining – finding hidden patterns, associations in the data, classifications and prediction of data
— Informatica is the best ETL tool for achieving data integration, for data migration.
—The ETL process utilize the SCD types (Slowly changing dimensions)
 Type 1 – Overwriting the old value.
No history maintained while updating the record
Type 2 – Creating a new additional record

Maintains history while updating by adding a new record with start_date and end_date

Type 3 – Adding a new column

Partial history maintained by just adding a new column with previous data .
Example current_value, previous_value

Type 4 – Using historical table

Show current value in dimension table but track all changes in separate table

— Data visualization

The final step after loading the DW using ETL, generate graphical representation of the data for the end users

7. Informatica Power center Client

Power center Repository Manager:

Power center Designer :

Load and join source data, cleanse the data, design the mapping based on the specifications and create a load target meta data

    Source Analyzer, Mapplet Designer, Mapping Designer, Target designer

    Transformations: source_qualifier, joiner, filter, router, aggregator, lookup, union, java etc

Power center Workflow Manager : Create workflows with sessions which intern includes mappings, configure session properties and execute the workflows

    Task developer, workout designer, workflow designer

Power center Workflow Monitor: Monitor the execution of the workflows fix the errors and verify if the data is processed.

8. Healthcare domain terms:

    Claim:

    A request submitted to a health insurance company by an insurance policy holder or by the

    provider to obtain the services that are covered in the health insurance policy.

    Deductible:

    The amount you must pay each year before your plan starts to pay for covered medical expenses.

    Coinsurance: cost sharing requirement

    You pay a percentage and the insurance company pays the remaining percentage for covered medical expenses after deductible is met.

    You pay 20% of coinsurance until your out of pocket limit is reached for the year.

    Out of pocket limit:

    Copay:

    The flat fee you must pay for each medical service.

    Explanation of Benefits: EOB

    Details about the insurance claim about for what services and what portion was paid to the providers and what portion of the payment is your

responsibility.

Benefit Data: the list of healthcare services , the plan is covered and the maximum cost , it will cover.

PBM:

Pharmacy Benefit Managers are the middlemen who manage the prescription drug benefits programs. They regulate the drugs prices, and the check for the correct drugs to be given to the patients etc.,

9. Datawarehouse concepts

— Datawarehouse:

A DW is a single, complete and consistent store of data , obtained from various sources and made available to the end users(business analysts, users etc)

Note: DW is not loaded every time a new data is added to database.

— Properties of DW: subject oriented, Integrated, Time-variant, Non volatile

— OLAP vs OLTP

OLAP [Datawarehouse] : historical data, for analysing the business, read data from it, primitive detailed data, operations(rollup, drill down, pivot, slice, dice), millions of data

OLTP [Database]: current data, for running the business, write data into it, summarized data (insert, delete, commit, rollback), less data

— Datamart:

It is a smaller version of DW, deals with single subject area, limited to few sources, occupies less memory, shorter time to implement.

— DW Architecture:

Data sources ->ETL -> Staging area -> ETL -> DW [metadata, aggregate data, raw data} -> Datamarts -> End Users

— Dimension:

A collection of reference information about a measurable event.

The tables that involved dimensions are called dimension tables.

Dividing a DW project into dimensions provides structured information for analysis and reporting.

Ex: Product, Customer

— Fact:

A fact is a measure that can be summed, averaged or manipulated. Contains dimension tables info.

It has 2 kinds of data . Dimension key, measure

Every dimension table is linked to a fact table

Ex: Fact table

Product(dimension) ->productID (dimension key)

                              -> number of units sold (measure)

— Schemas:

A schema gives logical description of the entire database. It gives details about the keys, constraints, which keys are linked between the tables etc.,

A database uses relational model. A DW uses star, snowflake and constellation

schemas.

     — Star Schema:

       Every dimension is represented as one dimension table and the fact table at the center contains all the dimensions keys along with measure attributes like number of units sold, revenue etc., It **stores redundant data in dimension tables,**

     — Snowflake Schema:

       Every dimension are normalized and split into multiple dimension tables, no redundant data..The fact table at the center with all dimension keys and measures.

     — Fact Constellation or Galaxy Schema:

       Contains multiple fact tables sharing dimension tables. It is viewed as collection of stars. The shared dimensions are called conformed dimensions.

10. SQL:

DDL - Data definition Language : CREATE, ALTER, DROP, TRUNCATE, COMMENT, RENAME

DML - Data Manipulation Language : INSERT, DELETE, UPDATE, LOCK, CALL, EXPLAIN PLAN

DQL - Data Query Language : SELECT

DCL - Data Control Language : GRANT, REVOKE

TCL - Transaction Control Language: COMMIT, ROLLBACK, SAVEPOINT, SET TRANSACTION

https://www.tutorialspoint.com/e-f-codd-s-12-rules-for-rdbms

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INTERVIEW 2 Java

  1. Core Java

Class, Object, Constructor, static, final, this, super

Abstraction(abstract class, interfaces) , Encapsulation, Inheritance, Polymorphism

◯   Collections (Arrays, List, Set, Map, comparable, comparator)

Method references, Lambda, foreach functional interfaces, streams

Exceptional handling

Multithreading

Synchronization

Annotations

Few new features (reflection api, generics, static import, enums, trywithResource, optional class, returning with objects etc)

Basic Programs
Programs with strings, arrays, collections, streams etc.,
Basics of **Datastructures** (Stack, Queue, Linked list, Sorting types and time complexities etc)

2. JDBC

3. SERVLETS , **HTTP   (full video on tsp & Servlets from telusko)**

4. JSP

5. SPRING BOOT

6. **DataStructures:**

Introduction to Programming

Decision trees & control, Binary number system, Strings, Arithmetic operators, Loops
Module 2 (8 Weeks)

Programming Constructs

Functions, Recursions, Pointers, Structures, Unions, Dynamic Arrays
Module 3 (15 Weeks)

Problem Solving & CS Fundamentals

Time Complexity, Arrays, Strings, Binary Search, 2 Pointers, Recursion, Hashing, Sorting, Bit manipulation, Stacks, Queues, Linked Lists, Trees, Tries, Heap, Greedy, DP, Graphs, DB, OS and Computer Networks

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Employee CRUD on arrays:

— Create Employee:

int sequence = 1;
int index ;

create(Employee emp) {
emp.setEmpId(sequence++);
employees[index++] = emp;

```
}

— Employee get(int empId) {

for(int I=0; I<employees.length;i++) {
if(employees[I].getempId == empId) {
emp=employees[I];
}
}
Return emp;
}
```

—Update emp. (have to set the new emp details to a new emp object and return true). — doubt ,

```
Boolean update(int empId, Employee emp) {
Employee empNew = new Employee();
empNew.setempId(empId);
empNew.setName(emp.getName));
Return true;
}
```

—delete emp
First make employees[i] = null, set deletedindex=I, status true

For shifting the array index positions
```
if(Status) {
for(int i=deletedindex;i<=employees.lenth;i++ ) {
  if(i+1 >length) {

}
```

— get all

```
List<employee> getall() {

Return employees;
}
```

— COLLECTIONS

Create:
```
Map<Integer,Employee> employees = new HashMap<>();
```

```
create(Employee emp) {
emp.setempId(sequence++);
Employees.put(emp.getempid,emp); }

— JDBC

— Load JDBC Driver class
Class.forName("com.mysql.cj.jdbc.Driver",url, root, password);
— create  connection
Connection con = DriverManager.getConnection();
— create statement() or prepareStatement()
Statement st = con.createStatement();
st.executeQuery(query);
PreparedStatement pstmt = con.prepareStatement(insertsql or updatesql);

// After insertion or after updation
pstmt.executeUpdate();

— create ResultSet
ResultSet rs = st.exceuteQuery(sql);
rs.next();




create(emp)
{

Connection con = DriverManager.getConnection();
String insertquery = "insert into employee(name, age..) values (?,?,?);
PreparedStatement ps = con.prepareStatement(insertquery);
          ps.setName(1,emp.getName()):
          ps.setAge(2,emp.getAge());
ps.executeUpdate();
}




update(emp) {}
delete(emptied) - its a. Query   preparesatement(update query)
get(emptied) -> its a query   prepare statement(deleteQuery)
getall() - >query , createstatement(), executeQuery(query)
```

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Core java
Advanced java

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CAPSTONE PROJECT(Microservices, saga pattern(choreography), database per service, API gateway, Registry Service, messaging(kafka)

Registry Service: (database of services with instances of Microservices)
Eureka Server
Spring-cloud-starter-netflix-eureka-server
@EnableEurekaServer

Eureka client: account, transaction,fundtransfer,gateway, admin
spring-cloud-starter-netflix-eureka-client
eureka.client.register-with-eureka = true
eureka.instance.prefer-ip-address=true

Gateway Service: (single entry point for all the client requests and routes/fans-out requests to Microservices)
spring-cloud-starter-netflix-zuul
@EnableZuulProxy
zuul.routes.account-service.path = /banking/api/accounts/**
zuul.routes.transaction-service.path = /banking/api/transactions/**
zuul.routes.fund-transfer-service.path = /banking/api/fundtransfer/**

Fund-transfer service: model as a valueObject, uses kafka messaging for inter service communication
spring-kafka. In pom.xml

#Kafka Bootstrap server (to connect to the Kafka cluster or kafka broker)
spring.kafka.bootstrap-servers=${KAFKA_BOOTSTRAP_SERVERS:localhost:9092}

In fund-transferservice
@Autowired
KafkaTemplate<String, String> kafkaTemplate
kafkaTemplate.send("FUNDTRANSFER_CREATED", fundTransferDetails); ;   // creates topic and enters the kafka pipeline