Internship in Amazon Web Services (AWS) Domain under Cognizant Technology Solutions

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Contents

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DECLARATION

This is to certify that the work titled **"Student Report"**, submitted by **Abhishek Sharma** under the partial fulfillment for the award of Bachelor of Technology in Electronics and Communication of **Jaypee University Of Information Technology** has been carried out under my supervision. This work has never been submitted elsewhere for the award of this or any other degree or diploma.

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ABSTRACT

In time where the number of data producers is getting increased the amount of data storing capability are also needed to be get broaden .Amazon Web Services are offering a large set of global cloud products which includes computing, databases, storing, networking, mobile, development ,security, iot and management tools .To deployment tools till data warehousing around about 140 AWS services are available till date and new services are keep on adding which can help to process and store data quickly .It allows startups , enterprise , small and medium-sized businesses and customers to access the data they need to respond in the changing market .

Chapter 1-RDBMS

The RDBMS stands for the "Relational Database Management System". The Relation in the RDBMS refers to the table i.e. column and row relationship. The relational database incorporates the databases that save the data in the sorted order using lines and areas. Hence it helped the user to discover and get to freedom to acess characteristics of the database.The RDBMS is called as the social database because the qualities in the database tables are releated to each other and tables in databases are additionally releated to each other[1]. Relational databases incorporates the databases that stores data in a composed association, using lines and segments. This makes it easy to discover and get to unequivocal characteristics inside the database.

1.1Features of RDBMS.

- RDBMS essentially give the information word references and metadata assortments that is valuable in the data handling method.

- The most widely recognized methods for information get to is SQL. Its fundamental language segments include information control language and the information definition language statements.

- RDBMS have become key pieces of detailing, examination and information warehousing applications for organizations as well.

- RDBMS gives essential key to information uniqueness in the databases.

- Provide us with forigen key which help us to store up same section in to at least two distinct tables to make the connection between proposals table.

- Relational database system provides referential data integrity[2].

1.2 Concept of Database

Basically, Thedatabase is a made up by heap of data. A database incorporates various tables and a table stores lines of information in a composed configuration portrayed by the table's sections. The greater part of this leads to the fundamental progression of the database

Different databases:

There are three databases available-

- Oracle

- SQL server

- My SQL

1.3 SQL

SQLstand for querry language .Basically it's a database programming language utilized for getting to and controlling information in a database. It is mostly valuable in taking care of the organized information, for example information containing the relations among substances and variables.[3]

It comprises of three basic languages:-

1. Data Definition Languages: This languages is used to create and modify the database for storing the data.

2. Data Manipulation Language : The DM language is used for the Read, Insert, operation in the table

 3. Data Control Language : This DC language is used to retrive of the data from the database.

SQL incorporates various significant orders that permit you communicating with this data.SQL is the most standard language that is utilized to get to databases since it can work with any database. The databases, with which you interface, are programs that empower customers to store and oversee data in a sensible way. As a rule, databases are grouped into two classifications that depend on the utilizing of SQL gauges. They are known as SQL and NoSQL databases. There are various assortments of SQL databases with little contrast. There are various assortments of SQL databases with little variety. To make things increasingly tangled, a large number of these databases have names that fuse the term SQL, for instance, MySQL and PostgreSQL[4].

1.3.1 Advantages of using SQL

- **Universal language-**SQL is one of the procedures that leaks over into different various orders. At the point when you work with SQL, you're utilizing the programming language's. This animates you to advance into coding with other various dialects

- **Easy to understand-** SQL is an open-source language that is used for storing the data, the language has an enormous network of designers. SQL is nearly simpler to learn than other programming dialects we know.

- **Manage million of data-** Customary spreadsheets can be utilized to oversee little to-medium-sized arrangements of data, so we will require an other arrangement when overseeing such colossal records, to oversee such mass information we use SQL. SQL licenses which we are using to perform exercises on this huge proportion of information without stressing over smashing [5]

- **Technology evolution-** Database advances like mysql and microsoft sql.Server fortify colossal affiliations, , banks, medical clinics, universities. Truth be told, each system or individual with access to a mechanical gadget in the long run contacts for sql. It is even on the cell phone since the android and ios phone both use the sql.

- **High demand-** Organizations are right now looking out those people who are talented in SQL. It's one thing to have the ability to increase a significant pay. Be that as it may, businesses know the value that someone, who is talented in SQL, prompts their affiliation and need to enlist these individuals [6]

1.3.2 Software

Software used for the writing SQL queries is mysql workbench

Mysql Workbench: it's a fixed together in the visual device for database designer and engineer. Mysql Workbench gives information about the demonstrating of data,SQL improvement, and complete association instruments for server structure, customer association, support, and extensively more. MySQL Workbench can opened on Windows, Linux and Mac os x.[7]

My sql workbenc h helps in the SQL user in the following mentioned ways:-

- Design SQL – My Sql Workbench enables the architect, or data artist to ostensibly design and manage databases.

- Develops- My sql Workbench passes on visual instruments for making, executing, and overhauling sql questions. The sql Editor gives concealing

semantic structure including, auto-complete, reuse of sql scraps, and execution history of sql.

- Administers- Mysql workbench gives a visual console to adequately manage mysql circumstances and increment better detectable quality into databases. planners and dba's can use the visual devices for orchestrating servers, directing customers, performing support and recovery.

- UI performance - mysql workbench surrenders a lot of contraptions to improve the show of mysql applications. dbas can quickly observe key execution pointers using the performance dashboard. execution reports give basic id and access to io hotspots,

- Data migration- mysql workbench directly gives an aggregate, easy to use answer for moving microsoft sql server, microsoft get to, sybase ase, postresql, and diverse rdbms tables, things and data to mysql. originators and dbas can quickly and adequately convert existing applications to run on mysql both on windows and various stages.

1.4 Creating database and basic command
DATABASE CREATION -

Syntax- Create database database_name;

Example:-

Create database colleges;

The above statment will create database with name colleges.

1.4.1 Data definition language command
Create -

Syntax- Create table tablename**.**

Example-

Create table student(

first__name varchar(20),

studentId int,

city varchar(20));

A table with the first name,studentid and city columns will be created.

To Create the primary and foreign key's in the database

Primary key- Primary key's are interestingly recognizes in the record , the table can only have a single essential key and it can't have invalid qualities.

Example- a table with name student is to be created and studentId is made the primary key[10].

Create table students(

first__name varchar(20),

last__name varchar(20),

studentid int,

city varchar(20)

primary key(studentid));

Foreign key- This key join the two tables together with each other,table containing the outside key is know as younger table while table with foreign key is know as the parent table.

Example- Creating a table with the name mark which will have a ID as the foreign key which will refer to studentsId in students table.

create table mark(

id int,

names varchar(20),

total_mark int,

primary key (names),

foreign key(id) reference students(studentid)

);

DROP - Drop command is used when we need to delete the table

Syntax - drop table table_name;

TRUNCATE - this command deletes the contents in the column rather than dropping the table.

Syntax - Truncate table table_name;

ALTER - alter command is used for updating or removing the schema of the table that is created.

- **Alter add column** -.

  Syntax –

  alter table table__name

  add column__name data type;

  Example - alter table student

  add marks int;

- **Alter modify column** -

  Syntax-

  alter table table__namee

  alter column__namee data type;

Example- alter table students

Alter city varchar;

- **Alter drop column -**

Syntax-

alter table table_namee

drop column__namee;

Exanple- alter table student

drop marks;

1.4.2 Data manipulation languages commands

Select – This command is used when we need to extract data from table .

Syntax-

select *from table__name

Used for retrieving complete table

Example - for extracting the complete data in the student table

select * from student;

Example - for retrieving the data from only the studentId and first__name column

 select first__name, studentid from students;

INSERT – this keyword is used when we need to add data in the database.

Syntax - insert into table_name(column1,column2)

values(values1,values2);

Example -

insert into students(first__name,last__name, studentId, city)

values (Abhishek,sharma ,161111,shimla);

UPDATE - for updating data in the database

Syntx – update name

set column_name1 = value1 ,

column_name2 = value2

where condition;

example -

update student

set first__name = abhi,

last__name = sharma

where studentid = 161111;

DELETE – Whenever we need to delete data in database we use delete command

Exampl - delete students where studentid = 161111;

WHERE CLAUSE - utilized for sifting records when a specific condition is satisfied

 Example –

select first_name, last_name

from table student

where city= 'shimla';

BETWEEN - for selecting the values between a range of data

Example - select from student

where studentid between 001 and 012;

LIMIT – Whenever we want to limit the data in the database we use it.

Example - select first_name , last_name from students

where city='shimla'

order by studentid asc

limit 5;

1.5 Commands for selecting from multiple tables

JOINS- these are used for the joining of two or more tables together .There are four types of joins[9].

INNER JOINS - Inner joins chooses all the lines from both the tables until the condition is gets satisfised.

Example -

Select orders.ordersId , customers.customersnames, orders.orderDate
from orders
inner join customers on orders.customerId = customers.Id

LEFT JOIN - This left join saves all data of the left table of the join and common columns for the table on the right side.

Example -

select customes.customrenames , orders.orderId from customes
left join orders on customers.customersId = orders.customerId
order by customs.customrname;

RIGHT JOIN - This right join saves all data of the right table of the join and
common columns for the table on the left side.

Example -

select ordes.ordesId, employes.lastname, employes.firstname
from orders right join employes on orders.employeid = employes.employeId
order by ordes.ordesid;

Chapter - 2 Java

2.1 Object oriented programming language

OOPs is the framework programming model that sorts out the programming structure around data instead of the limits and basis . OOPs major constituent is objects that refer to real word entities, that are used by the programming languages to include them as a objects and class. A thing can be portrayed as a data field that have the remarkable characteristics and behavior [10].

OOP revolves around the articles that specialists need to control instead of the justification required to control them. Along these lines to manage the composing PC programs is proper for programs that are immense, complex and adequately revived or kept up.

Object oriented language provides maintainability and reliability of the code by offering the following Benefits:

- **Reusability:** Reusability refer to the code or the object that is used in one class, can be reused in the child class.
- **Efficiency:** By giving the flexibility of reusing the code and pushing the data in the consolidated class provides efficiency
- **Scalability:** OOPs give alternatives to all for effectively characterize what steps can be performed on a class of items through a program. This expanded simplicity makes it simpler to make greater and increasingly complex projects.

2.1.1 Components of OOPs

OOPs offers Object class relationship that , enables for mapping the real world problems.

1. **Object**

   Objects suggests a genuine component, for instance, a pen, seat, table, PC, watch etc. Object in oops is a strategy to structure the programs using the class and thus it perform some action and it interact with the other elements.

2. **Class**

   The classes is a format of the diagram from which items are made. In simple words class can be defined as the collection or gathering of items which have got similar properties.

3. **Nested class and interface**

   - Inheritance - a procedure in which one class gets all the properties of a parent class.
   - Polymorphism - It's a procedure by which we can use single method in many ways.
   - Abstraction - It's a method of collecting the information, the usage subtleties and usefulness to the user[11].
   - Encapsulation – It's a method in which of the enclose the entire code and information into the single unit.

2.1.2 OOPs concepts

1. **Inheritance** - Inhertance in Java is a part wherein one article gets the resources and practices of a parent class.The idea of inheritance is that we can make new classes that are based in the wake of existing classes[12]. Exactly when you secure from a present class, you can reuse systems and fields of the parent class. What's more, you can remember new methodologies and fields for your current class also.Inhertance can addresses with the below mentioned points.

   - Method Overriding
   - For Code complexity

The syntax used for the Java Inheritance is given below -

class subclass__name extnds parentclass__names

{

}

extands shows the are making another class that gets from the present class. The importance of extands to manufacture the functionality.In the wording, a class which is obtained is knownsuperclass, and the new class is called subclass.

Type of Inheritance-

- Single
- Multilevel
- Multipe
- Hybrid
- Hierarchical
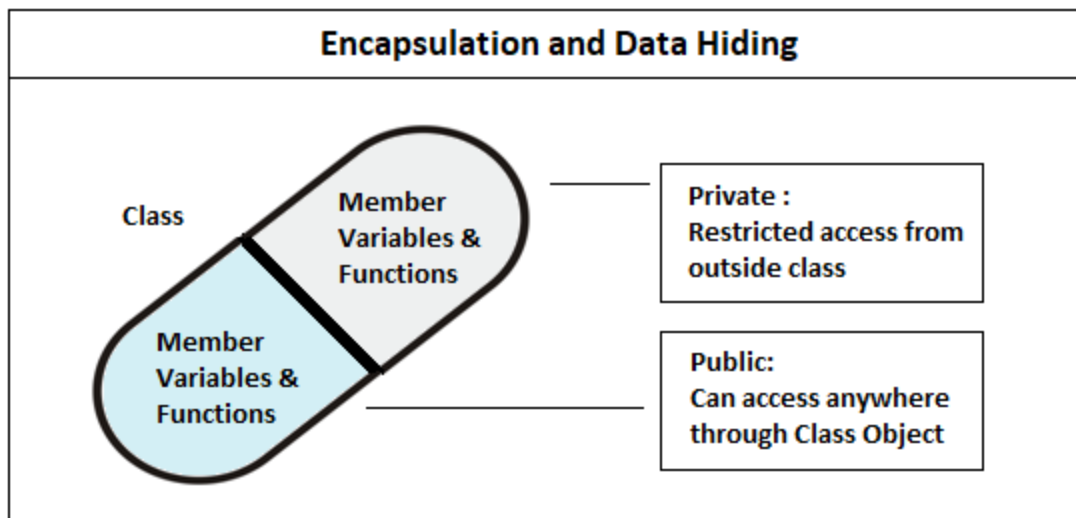
2.Polymorphism – Polymorphism is a thought by which we can play a singular movement in different habits. Polymorphism is made of two word that is poly and morphism. Where word poly means various and the change structures. There are 2 types of poly-morphism which are mentioned below-

- Compile-time polymorphism - It's a type of polymorphism that is set during compiler time is known as compile time polymorphism. This technique over-burdening is a case of order time-polymorphism. This permits us to have more than one technique having a similar name , if the parameters of strategies are diverse in number, grouping and information sorts of parameters.

- Run-time polymorphism – In this type of polymorphism a procedure where the abrogated strategy is set to the runtime as opposed to accumulate time.In this procedure this technique is called through reference variable of parentclass.

class vehicle

{

void speed( )

{

```
system.out.println("speeding");

}

}

class creata extands bikes{

void run()

{

system.out. println ("speeding securely with 60km");

}

public static void main (string args[ ])

{

creata c =new creata();

c.speed();

}

}
```

3.Abstraction – This is the process in which we are choosing information from a bigger place to show just the significant subtleties of the article to the client. It assists with diminishing programming intricacy and exertion. Abstraction is the most important part of the OOPs. Components are listed below-

- Abstract Class- Abstract classes are like interfaces. You can't start up them, and they may contain a blend of strategies proclaimed with or without an execution. In any case, with dynamic classes, you can pronounce fields that are not static and last, and characterize open, ensured, and private solid strategies. With interfaces, all fields are naturally open, static, and last, and all techniques that you proclaim or characterize (as default strategies) are public in nature

- Abstract method - Abstract method is a technique in which code is without a body thus it called in the theoretical class. This technique will never be last in light of the fact that theoretical class must be actualize all the strategies. These strategies don't have the usage it just has technique signature if the class is utilizing a theoretical strategy they should be pronounced dynamic[13].

Example of Abstraction-

```
abstract class human {

 public abstract void humansound();

 public void sleep()

{

system.out.println  ("zzz");

 }

}
class man extends human

 {

 public void mansound()

{

   system.out.println("hi hi");

 }

}
class main{

public static void main(string[] args) {

man myman = new man();
```

myman.mansound();

mymansleep();

 }

}

4. Encapsulation- Encapsulation is important feature of the oops it can be defined as enclosing of the whole of the data in just a single unit. It is process that hold together the all code and the data it manipulates . In Other words encapsulation can be defined as a protective shield that prevents the data from being accessed by the code outside this world.Example of the encapsulation is given below -

```
 public class man

 {

 private  string  names;

 public string getname()

 {

 return names;

 }

 public void  setname (string  newname)

{

this.names = newname;

}

}
```

Advantages-

- Better control of the classes attributes.

- The attributes can be made to read only
- It increased the security
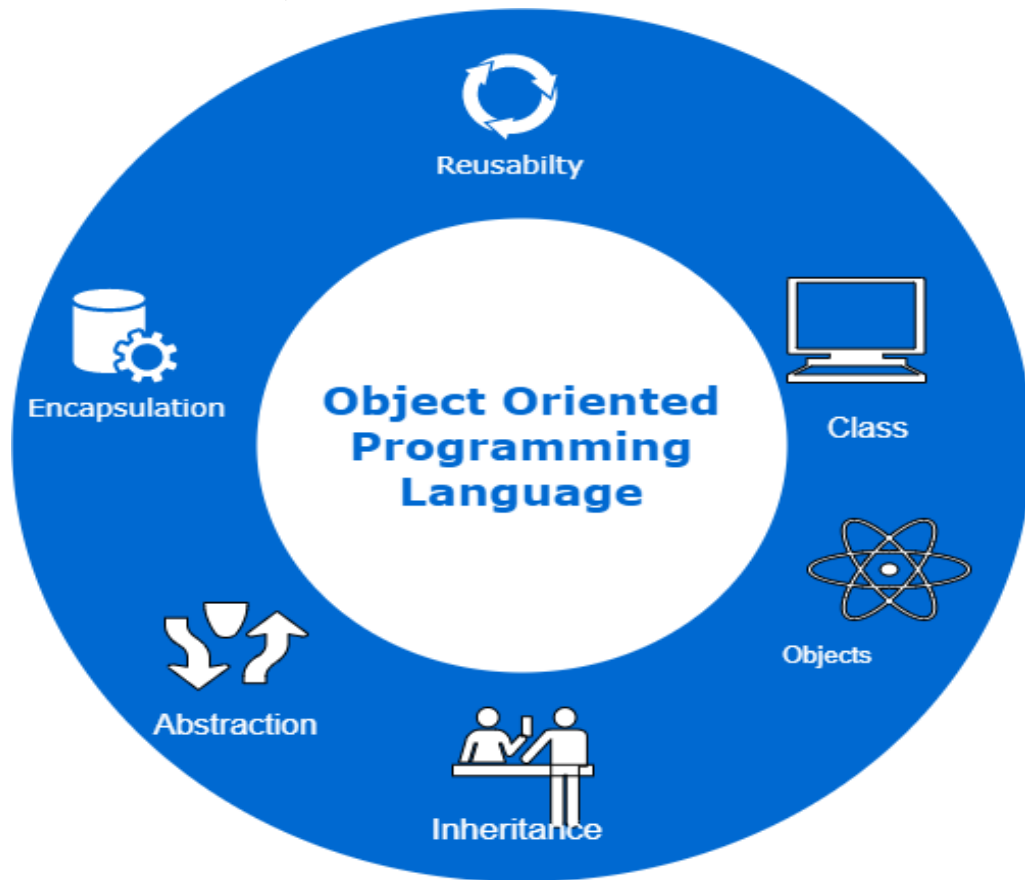
Basic Constituents of OOPs

2.2 Introduction to Java

Java is generally used in the article situated programming, which is planned basically for use in circulated condition of internet. Java is a broadly useful in many purpose like object-arranged, the class-based and the runtime environment . It is an acclaimed programming language for android developers, game engineers and web of things (iot). Be that as it may, is less complex to utilize and implements an item situated programming model. [14]. Java is used in the following domains:

- Banking: To manage exchange the board.
- Retail: Billing applications that you find in a store/café are totally written in Java.
- Data Technology: Java is intended to illuminate usage conditions.
- Android: Applications are either written in Java or use Java API.
- Money related administrations: It is utilized in server-side applications.
- Financial exchange: To compose calculations concerning which organization they ought to put resources into.
- Enormous Data: Hadoop MapReduce system is composed utilizing Java.
- Logical and Research Community: To manage colossal measure of information.

Following reasons are underlying features that made java so broaden in today's world:

- Java is compatible with various platforms like Windows, Linux and so on.
- The java is one of most mainstream language
- It is easy to use
- An open-source and free language
- The language is most secure and ground-breaking
- Java offers tremendous network support (a huge number of designers)
- Java is an article arranged language which gives a reasonable structure to programs and permits code to be reused, bringing down advancement costs
  - As Java is near C++ and C#, it makes it simple for developers to change

  Java is used for :

- Web servers and various web application uses java because of its modularity and efficiency.
- Versatile applications (extraordinarily Android applications)
- Work area applications
- Web applications
- Games
- Database association
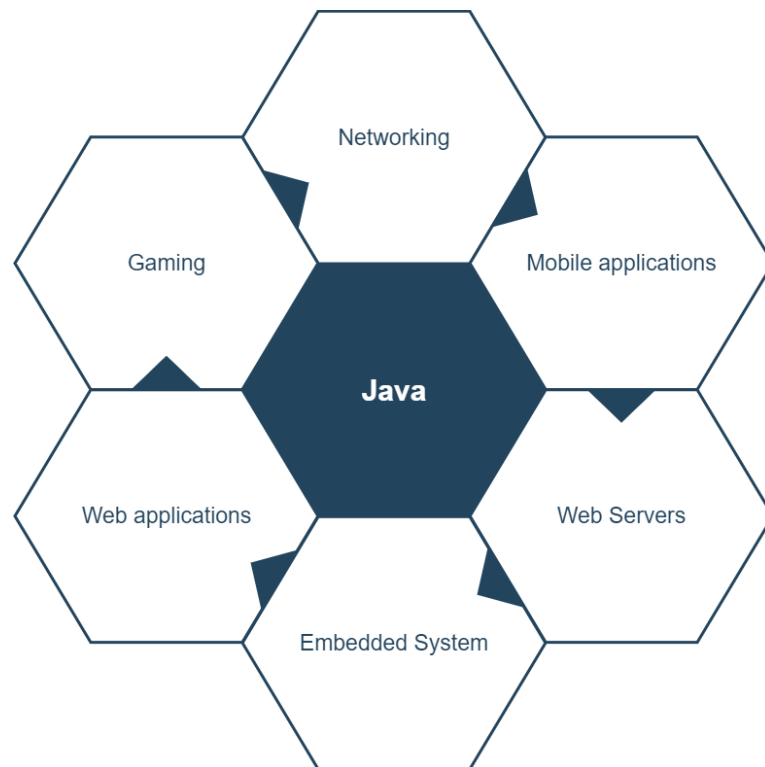
Uses of Java in Different Domains

2.2.1 Features of Java

- JAVA is object situated: An article is comprised of information as fields or properties and code as techniques or strategies. A technique is the item's abilities or practices. Java was for the most part worked as an item orientated language. Java likewise utilizes a programmed city worker to oversee object lifecycles. A software engineer will make objects, however the programmed trash specialist will recoup memory once the article is not, at this point being used. Be that as it may, memory holes may happen when an item which is done being utilized is put away in a compartment.
- Data is secure: Java does not use the pointers, which can be unsecured.
- Java convert it's data into byte code which is not readable by humans
- Easy to learn: Developers can understand the java quickly it's quite easy than other lamguage.

2.2.2 Uses of Java

- It is simple for engineers to compose programs which utilize mainstream programming configuration examples and best works on utilizing the different segments found in Java EE. For instance, systems, for example, Struts and JavaServer Faces all utilization a Java servlet to execute the front controller configuration design for bringing together demands.
- A major piece of the Java biological system is the huge assortment of open source and network constructed ventures, programming stages and APIs. For instance, the Apache Foundation has an assortment of activities composed utilizing Java, including basic logging structures for Java (SLF4J), both Yarn and Hadoop handling systems, Microservices improvement stages and incorporation platforms[15].
- Java EE situations can be utilized in the cloud too. Designers can construct, send, troubleshoot and screen Java applications on Google Cloud at an adaptable level.In terms of portable turn of events, Java is generally utilized as the programming language for Android applications. Java will in general be favored by Android engineers on account of Java's security, object-situated standards, routinely refreshed and kept up include sets, utilization of JVM and structures for systems administration, IO and stringing

2.3 Variable and datatype in Java

The variable in java are listed in three parts:-

- Local Variable - A variable proclaimed inside the body of the strategy is called nearby factor. You can utilize this variable just inside that strategy and different techniques in the class aren't even mindful that the variable exists.The neighborhood variable can't be characterized with "static" watchword.
- Instance Variable - A variable announced inside the class however outside the body of the strategy, is called case variable. It isn't pronounced as static.It is called occasion variable since its worth is example explicit and isn't shared among cases.
- Static variable - A variable which is proclaimed as static is called static variable. It can't be nearby. You can make a solitary duplicate of static variable and offer among all the examples of the class. Memory designation for static variable happens just once when the class can be saved in the memoryunit.
  There are basically 2 types of data types:-
- Primitive datatypes**:** The primitive data types are those which includes char,int
- Nonprimitive datatypes: The nonprimitivedatatypes are those which include Classes and Interfaces

2.4 Java operator

- Arithmetic operators - Arithmetic operators are utilized to perform scientific tasks like expansion, deduction, increase, and so forth.
- Assignment operators - are utilized in Java to relegate esteems to factors.
- Logical operators - Logical operators are utilized to determine the rationale between values and variable:

Chapter 3 - Python programming

This programming language is powerfull composed and is user friendly. The programming language can supports different ideal models which are including organized, object-oriented.There are two significant Python forms: Python 2 and Python 3. [16].

3.1 Features of Python
- Simple - Python is easy to use thus programmer friendly language
- Interpreted language - In python the interpreter executes the code written by user line by line.
- Platform language – Python can run on many different platforms such as windows and Ubuntu etc.
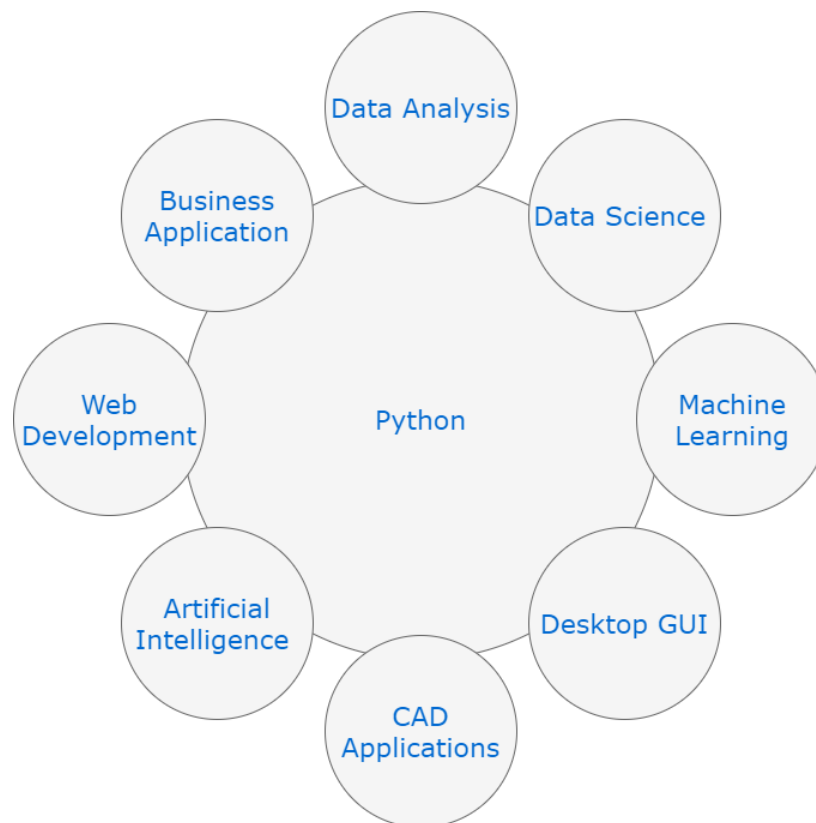
Uses of Python in different domains

3.2. Software used

For python programming we use spyder IDE , an open source tool used for the Python language it provides multiple features, they are mentioned as below:

- progressed editing,
- analysis,
- debugging and profilin

3.2.1 Features of Spyder

- The editor with sentence structure featuring, thoughtfulness, code finish
- Support for different Python console
- The capacity to investigate and alter factors from a GUI Project support, permitting take a shot at numerous improvement endeavors all the while
- A worked in document pilgrim, for interfacing with the filesystem and overseeing ventures

3.3 Python commands

- **Python variables** - Variables are compartments for putting away information values different than the other programming language thus the language has no proper order for calling a variable.A variable is made when you assign the value to it.

  Example -

  y = "gopi"

  print(y)

- **Python numbers** – In python there are the 3 numeric types the variables of numeric types which are created when we assign the value ,to verify the data-type of the object python used type() command.data typesare as follows-

  Int

Example -

```
x= 12
print(type(x))
```

- **Python casting**- Basically it is used to specify the type of variables when recquired.this is done with the help of type casting,it is done using some functions[18].

  Example-

```
 x= int(2)
y = int(2.4)
```

- **Python lists**-a list is like an array,it is a collection of different things which can be changeable and ordered.python uses [] i.e. square brackets to specify lists.

  Example-mylist=["mobiles", "TV", "airconditioners"]
  print(mylist)

- **Tuples**- a tuple is also like a list but is ordered in way and cannot be changed.Tuple is specified in python using round brackets.

  Example-employeesTuple=["clerk", "manager", "Teamleader"]
  print(employeesTuple)

- **Conditions** –
  Python support the logical conditions like equals,not equals and less than these conditions are executed using loops and if else statements.
  1. Elif – elif statement is used when the previous statement gets failed.

  Example –
  b= 10
  a=10

```
if a>b :
print ( b )
elif a==b:
print ("a equals b")
```

2. **Else-**this statement is used when the if statement can't get executed .

Example -

```
b = 10, a=10
if  a  >  b:
print("a is greater compared to b")
elif a == b:
print("a and b are equal ")
else:
 print("b is greater")
```

3. **For loop**- for loop is used to run the statement multiple time until the conditions becomes false

   Example -

   ```
   equiments=["dumbell", "plates", "rod"]
   for x in equiments:
   print(x)
   if x== "dumbell":
   break
   ```

- **Function-** Function is a statement or block which gets executed only when it is called,data is passed into the function in the form of parameters, in python function is defined by def keyword.

  Example -

  ```
  def equiments():
  print("this is a collection of equiments")
  ```

3.4 Python concepts

Python is additionally an object oriented language since from starting. Python is an object oriented languagee. It permits us to create applications utilizing an Object Oriented methodology. In Python, we can undoubtedly make and use classes and objects.Major standards of item situated programming framework are given below[19].

1.Classes and objects- Python is object arranged so everything in python is an item which has its own qualities and conduct and class resembles blueprint of object

- Creating a class-for making a class in python 'class' watchword is utilized.
  eg -class representatives:

  ajit=5

- Creating an object

  eg- emp1 = representatives()

  print(emp1.rajat)

2.Inheritance-This process in which python child class inherit all the properties from the superclass.

Creating a parent class

Example-class employees:
 def __init__(clerk,fname,lname):
 clerk.first_name=fname
 clerk.last_name=lname
 def printname(clerk):
 print(clerk.first_name, clerk.last_name)

using another class office to create a object
x = office(Abhishek", "Sharma")
x.printname()

Creating a child class- We are creating a class which will gets all properties of the parent class,parent class has to be passed as a parameter in child class,use the pass keyword for this purpose.

Example- class Staff(employees):
  pass

3.File handling-Integral part of web development,It consists of deleting,reading and updating files,.they are given as follows-

'r'- reads.it will open the file for reading purpose.

'a'-append,appends the given file

'w'-write,for writing in given file

'x'-create,for creating the new file

Example –

 b= open("abs.txt", "r")

- **Read()-**this method which return the complete data in the file but one can also specify the number of line or characters they want to return.

  Example –

  b= open("abhi.txt", "r")
  print(a.read(**10**))

- **Closing –** Closing file handling helps us to close the opened file

  Example –

```
b = open("abs.txt", "r")
print(b.readline())
b.close()
```

- **Write and create files**-for writing into existing file open() finction has to be used

  Write-

  'a'- append is used to append to the end.

  Example –

  ```
  b= open("abs.txt", "a")
  b.write("file is completed")
  b.close()
  ```

  'w'- write will overwrite the file.

  Example -

  ```
  b = open("abhishek.txt", "w")
  b.write("adding  content")
  b.close()
  b = open("abu.txt", "r")
  print(b.read())
  ```

- **Create -** for creating a file use the file use the open keyword.

  'x'- create a new file.

Chapter -4 Amazon Web Service

4.1 Introduction

AWS stand for amazon web services. In AWS, the clients are provided with the cloud computing platforms that can be used for functional purposes provided via payment basis. There are many companies like netflix ,airbnb,adobe which use AWS for reaching of their demands. Now the question arises why there was a need to adapt to use AWS, Simply the answer is to reduce the overburden on the server.

Components of Hadoop
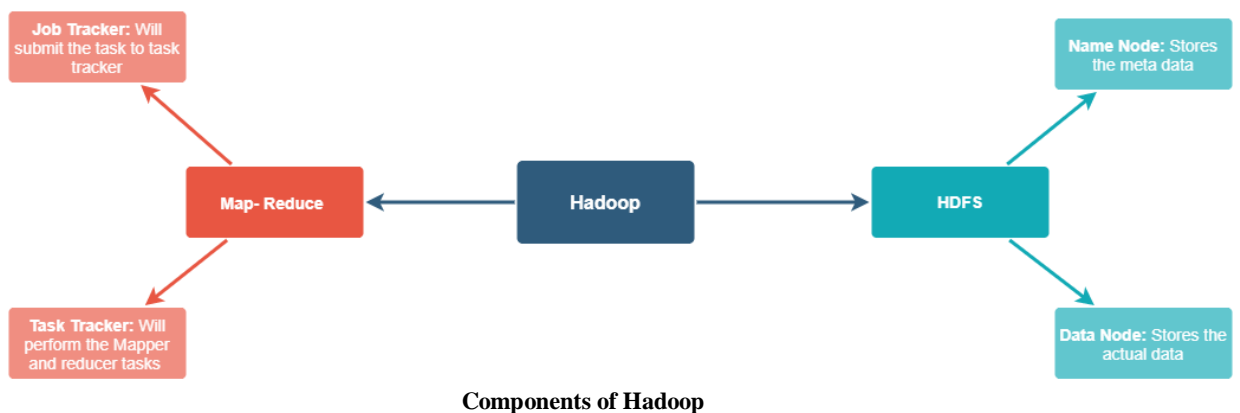
AWS offers computation, storage of the various data of the users, in the cloud database. And enables migration of various data marts by enabling minimum network and content Delivery latency. AWS offers many Management tools for offering security and Identity Compliance.

For computing in AWS, we have various methodology that enables the compute workloads evenly on all the servers. The storage domain include various services like elastic block store for data storage.

4.2 Big data and Hadoop

- Big data as from the word we are getting big amout of data or large amount of data which can't be stored and processed using the traditional approach.So big data is mixture of the organized,and unstructured information gathered by associations that can be dug for data and utilized in AI ventures, prescient demonstrating and other progressed examination applications. Organizations utilize the huge information gathered in their frameworks to improve activities, give better client care, make customized promoting efforts dependent on explicit client inclinations and, at last, increment gainfulness. Organizations that use large information hold a potential upper hand over those that don't since they're ready to settle on quicker and progressively educated business choices, if they utilize the information successfully.The qualities of enormous information is referenced underneath –
- Size- The measure of created and set aside data. The size of the data chooses the value and potential comprehension, and whether it will in general be seen as huge data or not.
- Diversity - The sort and nature of the data. This helps people who look at it to satisfactorily use the resulting understanding. Enormous data draws from content, pictures, sound, video; notwithstanding it completes the process of missing pieces through data blend.
- Extensible -The size of the data can expand.
- Merit –Help to store the data in large server

Apache Hadoop is the structure for conveyed capacity and registering(blend of Processor and RAM) model to manage enormous volume of data. Apache Hadoop is a combination of open-source programming utilities that support using an arrangement of various PCs to handle issues including colossal proportions of data and computation. It gives an item structure to dispersed limit and treatment of tremendous data using the MapReduce programming model. The hadoop have two parts

- MapReduce (processing)
- HDFS(storage)

4.2.1 HDFS

HDFS refers to Hadoop Distributed File System, that is the heart of the Hadoop structure.

- It is a java-based document framework where all of the Hadoop's information resides
- Hadoop has the Master-Slave engineering. It is called as Master-Slave engineering as it comprises of a Master which assumes responsibility for all the Slaves.
  Here the Master is named as Name nodes and the Slaves are named as Datanodes.
- HDFS comprises of the pools of Big Data and supporting Big Data Analytics applications.
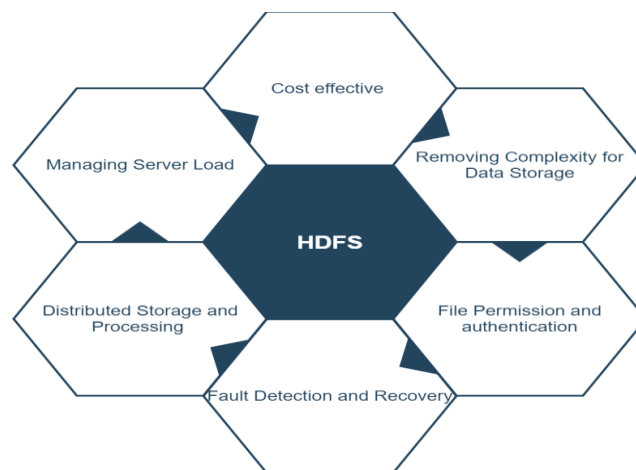

Usage of HDFS
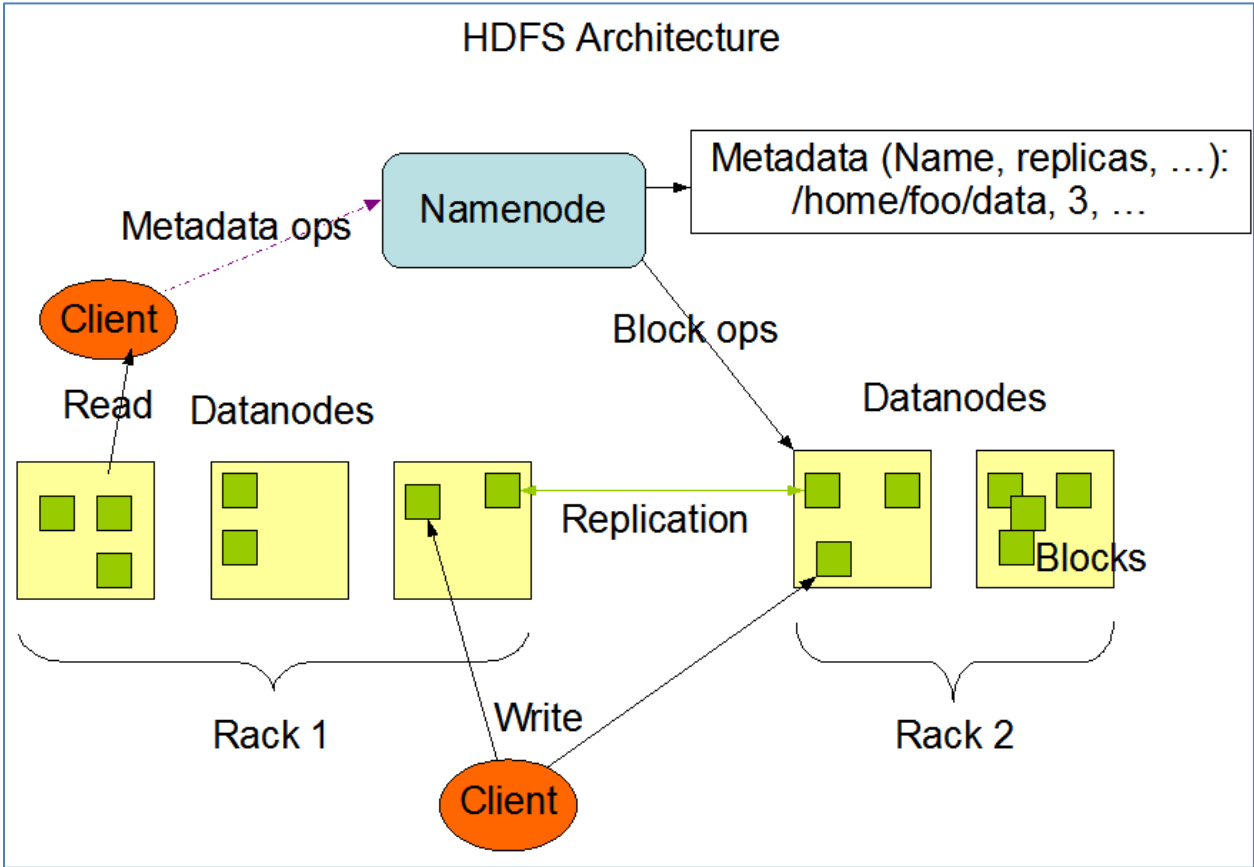
HDFS Architecture

4.2.2 Map Reduce

Map Reduce is a programming model for developing a big data sets that are creates via different parallel distributed algorithms that are performed on the cluster. Map Reduce calculation contains two significant undertakings,

- Map : Is used for Filtering and sorting of data
- Reduce: For performing summary operation e.g. aggregation, average etc.
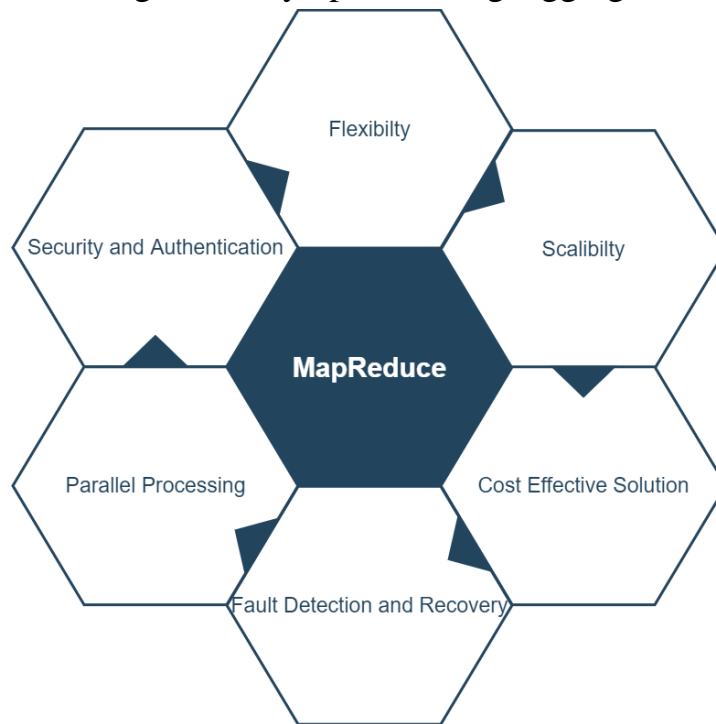
Usage of Map Reduce

Map Reduce program executes in two phases, to be specific guide organize and lessen stage-
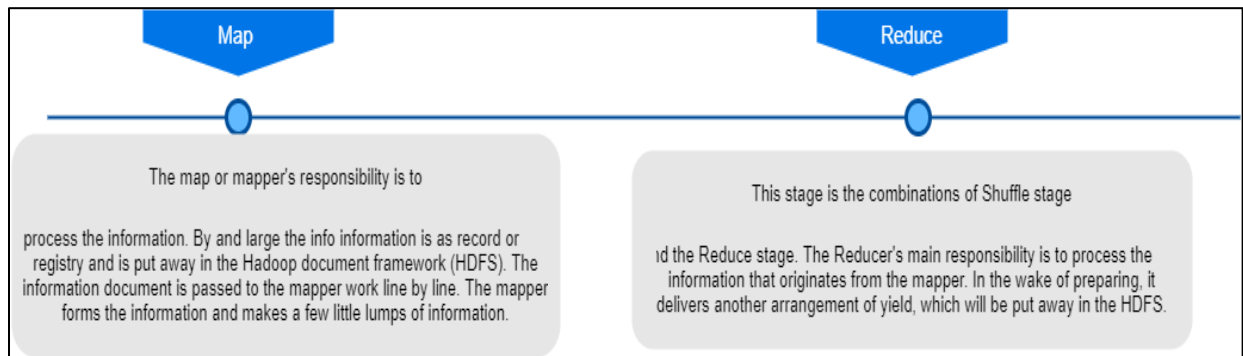
Description of MapReduce

4.3 Various Domains of AWS

Domain of AWS

Compute	Storage	Database	Security & Identity, Compliance

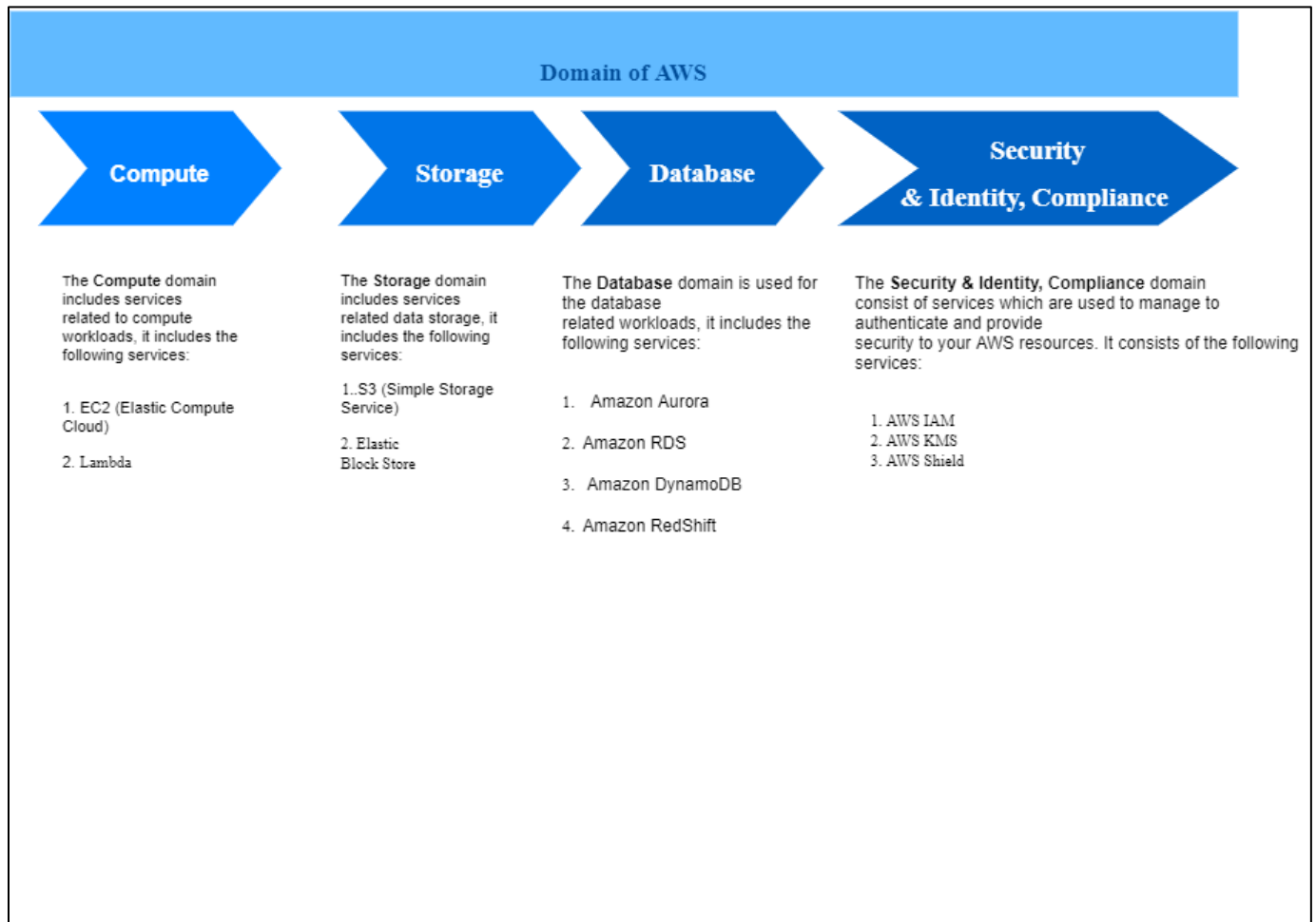The **Compute** domain includes services related to compute workloads, it includes the following services:

1. EC2 (Elastic Compute Cloud)
2. Lambda

The **Storage** domain includes services related data storage, it includes the following services:

1..S3 (Simple Storage Service)
2. Elastic Block Store

The **Database** domain is used for the database related workloads, it includes the following services:

1. Amazon Aurora
2. Amazon RDS
3. Amazon DynamoDB
4. Amazon RedShift

The **Security & Identity, Compliance** domain consist of services which are used to manage to authenticate and provide security to your AWS resources. It consists of the following services:

1. AWS IAM
2. AWS KMS
3. AWS Shield

References

[1] . "A Relational Model of Data for the Large Shared Data Banks". Communications of the ACM

[2]Gray, Jim (September 1981). "The Transaction Concept: Virtues and Limitations" (PDF)s. Proceedings of the 7th International Conference on Very Large Databases. Cupertino, CA: Tandem Computers. pp. 144–154. Retrieved 2006-11-09.

[3] "NoSQL databases eat into the relational database market". Retrieved 2018-03-14.

[4] Connolly, Thoma M.; Begg, Carolyn E. (2014). Database Systems – A Practical Approach to Design Implementations and Management (6th ed.). Pearson.

[5] A Relational Databases Overviews". oracle.com.

[6] Distributed Relationals Database Architecture Reference. IBM Corp

[7] "Chapter 2: Installations ". MySQL Workbench. MySQL. November 27, 2014.

[8] SQL-92, 4.22 SQL-statements, 4.22.1 Classes of SQL-statements "There are at least five ways of classifyings SQL-statements:", 4.22.2, SQL statements classified by function "The following are the main classes of SQL-statements:"; SQL:2003 4.11 SQL-statements, and later revisions.

[9] "SQL". Oxforddictionaies.com. Retrieved 2017-01-16.

[10] Byous, Jon (c. 1998). "Java technology: The early years". Sun Developer Network. Sun Microsysems. Archived from the original on April 20, 2005. Retrieved April 22, 2005.

[11] Object-oriented -programming "The History of the Java Technology". Sun Developer Networks. c. 1995. Archived from the original on February 10, 2010. Retrieved April 30, 2010.

[12] "Multiple Inheritance of State, Implementations,". The Java™ Tutorials. Oracle. Archivedf rom the original on November 9, 2014. Retrieved December 10, 2014.

[13] Chaudhary,and Harry Hope "Cracking The Java Programming Interview :: ::2000+ Java Interview Q/A ". Retrieved May 29, 2016.

[14] Why Java™ Was – Not – Standardized Twice"(PDF). Archiveds(PDF) from the originals on January 13, 2014. Retrieved June 3, 2018.

[15] "Java Community Process website".. May 24, 2010. Archived from the original on August 8, 2006. Retrieved June 9, 2010.

[16] Guttag, John V. (12 August 2016). Introduction to theComputation and Programming Using Python: With Applications to Understanding Data. MIT Press.

[17] Shell, Scott (17 June 2014). "An introduction to the Python for scientific computing"(PDF). Retrieved 3 February 2019

[18] Python Releases Python 3.8.3". Python.org. Retrieved 14 May 2020.

[19] Simionatos, Michele. "The Python 2.7 Method Resolution Order". Python Software Foundation.

[20] "Amazon Web Services About Us". Aws.com.in September 2011. Retrieved May 16, 2012.

[21] IBM What is the big data? – Bringing big data to the enterprise". ibm.com. Retrieved 26 August 2013

[22] "MapReduce: Simplified Data Processing on Large Clusters" (PDF)..

Conclusion

Data and analytics have become absolutely important for companies and businesses to stay competitive. Companies use reports, dashboards, and analytics tools to release insights from their data to monitor their business performance, and help in decision making. Data gets into a data warehouse from transactions relational databases, and other means. This massive amount of data in data warehouse can be handled with help of amazon cloud which helps in storing, collecting and analysing this data. the cloud services provided my amazon, AWS offers various advantages associated with cloud computing such as limitless storage capacity and computing capacity. It also helps in scaling your systems along with growing amount of data collected, stored and managed and paying only for resources you provision. Further AWS offers a wide range of managed services that work seamlessly with each other and makes the deployment faster and easier for analytics and data warehouse