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Assignment No. 01

* Title:- Case study on Amazon EC2 to learn about Amazon EC2.

* Objectives:- 1) To acquire knowledge of web services.
2) To acquire knowledge of storage & virtual cloud options.
3) To study AWS load Balancing Service.

* Theory:-
Applications using cloud computing are gaining popularity day by day for their high availability, reliability and utility service model.

* Amazon Web services (AWS):-
In 2006, AWS started to offer IT services to the market in the form of web services, which is now known as cloud computing. With this cloud, we need not plan for servers and other IT infrastructure which takes up much of time in advance. We pay only for what we use with no up-front expenses and no-long term commitments, which makes AWS cost efficient

Custom Applications & services:
- Monitoring : Amazon Cloud Watch
- Management : AWS Management console
- Tools : AWS Toolkit for Eclipse
- Content delivery : Amazon cloud front
- Compute : Amazon Elastic compute Cloud (EC2)
- Storage : Amazon Simple storage service (S3)

* Amazon EC2:- delivers scalable, pay-as-you-go compute capacity in the cloud.
* Amazon S3:- provides a fully redundant data storage infrastructure for storing & retreiving any amount of data at any time & anywhere
* Amazon Relational Database service (RDS): makes it easy to setup, operate, and scale a relational database in the cloud.
* Amazon Elastic Map reduce:- enables businesses, researchers, data analysts, and developers to easily & cost-effectively process vast amounts of data.
* Amazon Flexible payments service (FPS): facilitates the digital transfer of money between any two entities, humans or computers.
* Amazon cloud watch:- Provides monitoring for AWS cloud resources starting with Amazon EC2.

* Amazon Elastic compute cloud

Amazon EC2 is a web service interface that provides resizable compute capacity in the AWS cloud.
EC2 instances can be resized & the number of instances scaled up or down as per our requirement. These instances can be launched in one or more geographical regions and Availability zones (AZs). Each region comprises of AZs at distinct locations, connected by low latency networks in the same region.

* EC2 components:-

- Operating system support:-
Supports multiple OS in which we need to pay additional licensing fees like: Red Hat Enterprise, SUSE

Enterprise and Oracle Enterprise Linux, UNIX, Windows Server etc. They need to be implemented in conjunction with Amazon Virtual Private cloud (VPC).

- Security:
In AWS EC2, the security systems allow create groups & place running instances into it as per the requirement.

- Pricing:-
AWS offers a variety of spie pricing options depending on the type of resources, types of applications & database. It allows the user to configure their resources and compute the charges accordingly.

- Fault tolerance:-
Allows users to access its resources to design fault-tolerant applications.
EC2 also comprises geographical regions and isolated locations known as availability for fault tolerance and stability.

- Migration:-
Allows users to move existing applications into EC2.

* Features of EC2:-

- Reliable:- Amazon EC2 offers a highly reliable environment where replacement of instances is rapidly possible.

- Designed for Amazon Web Services:-
It provides a complete solution for computing, query processing and storage across a wide range of appl's.

- Secure: Amazon EC2 works in Amazon virtual Private cloud to proride a secure and robust network to resources.
- Flexible tools:- Provides tools for developers & system administrators to build failure applications and isolate themselves from common failure situations.
- Inexpensive:- Amazon EC2 wants us to pay only for the resources that we use.

* How to use AWS EC2

Step 1:- Sign-in to AWS account and open IAM console by using the link : https://console.aws.amazon.com/iam/.

Step 2:- In the navigation Panel, create/view groups & follow the instructions.

Step 3:- Create IAM user chose users in navigation pane. Then create new users and add users to the groups.

Step 4:- Create a Virtual Private cloud using the following instructions.

-Open the amazon VPC console.
-Select VPC from the navigation panel. Select the same region in which we have created key pair. select start VPC wizard on VPC dashboard.
- Select VPC config. page & make sure that VPC with single subnet is selected. Then choose Select.
- VPC with a single public subnet page will open. Enter VPC name in the name field and lea

other configurations as default.
-Select create VPC, then select OK.

Step 5: Create WebserverSG security groups and add rules using the following instructions. On the VPC console, select security groups in the navigation panel.
Select create security group and fill required details.
Now a group is created.

Step 6:- Launch EC2 instance into VPC using the following instructions.
-Open EC2 console by using link: https://console.aws.amazon.com/ec2/
-Select launch instance option in the dashboard.
- A new page will open. Choose instance type and provide the configuration. Then select Next: configuration Instance Details.
- Select VPC from the network list. Select subnet from the subnet list and leave the other settings as default.
Click Next until the Tag Instances page appears.

Step 7: On the Tag instances page, provide a tag with a name to the instances. Select Next: configure Security Group.

Step 8:- Choose the select an existing security group option. Select the WebServerSG group that we created previously, and then choose 'Review and Launch'.

Step 9: Check Instance details on Review Instance Launch page then click the launch button.

Step 10:- A pop up dialog box will open. Select an existing keypair or create a new key-pair. Then select the acknowledgement checkbox and click the Launch Instances button.

Conclusion:-
Thus we have studied that Amazon cloud compute cloud (EC2) is a central part of Amazon.com's cloud computing platform, Amazon Web services & How EC2 allows users to run virtual computers on which they can run their own computer applications.

Short questions:-

1) What is cloud computing?
→ Cloud computing is the on-demand availability of computer system resources, especially data storage & computing power, without direct active management by the user.

2) List and explain cloud models.
→ Cloud models are: 1) private cloud
2) public cloud
3) hybrid cloud
4) community cloud.

3) What are cloud services? Give examples.
→ Cloud services are infrastructure, platforms or software that are hosted by third-party providers and made available to users through the Internet.
Infrastructure as a service: eg:- AWS, Microsoft Azure

platform as a service: eg: Oracle, IBM cloud
Software as a service: eg: Gmail, Dropbox etc.

4) What is Amazon EC2 instance?
↔ Amazon Elastic compute cloud provides scalable computing capacity in the AWS cloud.
An Amazon EC2 instance is a virtual server in Amazon's Elastic compute cloud (EC2) for running applications on the AWS infrastructure.

5) What are the components of EC2?
→ The main components of EC2 are:
- Operating system support
- Security
- Pricing
- Fault tolerance
- Migration.

6) What are the services provided by cloud computing?
→ - Hybrid cloud and multicloud
- Test and deployment
- Big data analytics
- IAAS
- PAAS
- SAAS

7) List down basic ~~components~~ characteristics of cloud computing.
→ 1) On demand self service
2) Broad Network Access - Geographically distributed
3) Rapid Elasticity - scale in & scaleout easily

4) Resourceful
5) Measured services - cloudwatch (for bill generation of service time)

8) Enlist feature of EC2 ?
→ The features of EC2 are:-
1) Reliable
2) Designed for Amazon Web services
3) Secure
4) Flexible tools
5) Inexpensive

Rahul 10/10

Assignment No-02

* Title:- Install and configure Google App Engine.

* Theory:

- Introduction:- Google App Engine is a web application hosting service. By web application we mean an application or service accessed over the web, usually with a web browser: storefonts with shopping carts, social networking sites, multiplayer games, mobile applications, survey applications, project management, collaboration, publishing and all the other things we're discovering are good uses for the web.
- In particular GAE is designed to host applications with many simultaneous users.
- As more people use the applications, App Engine allocates more resources for the application and manages the use of those resources.
- The app engine is a cloud-based platform, is quite comprehensive & combines infrastructure as a service (IAAS), platform as a service (PAAS) and Software as a service (SAAS).
- The app engine supports the delivery, testing and development of software on demand in a cloud computing environment that supports millions of users & is highly scalable.

* Google App Engine:-

It is a PAAS cloud computing platform that is fully managed and uses inbuilt services to run your apps.

As soon as you have signed up for a cloud account, you can ~~ot~~ build your app:

- With the template/HTML package in Go
- With Jinja2 & webapp2 in Python
- With cloud SQL in PHP

• with Maven in Java

* Generally Available features:
These are covered by the depreciation policy and the service-level aggrement of the app engine.
These include data storage, retrieval & search, communications, process management, computation, app configuration & management.
• Data storage, retrieval & search include features such as HRD migration tool, Google cloud SQL, logs, datastore, dedicated memcache, blobstore, Memcache & search.
• Communications include features such as XMPP, channel, URL fetch, mail & Google Cloud Endpoints
• Process management includes features like scheduled tasks and task queue
• computation includes images
• App management & configuration covet app identity, users, capabilities, traffic splitting, modules, SSL for custom domains

* Advantages of GAE:
1) Infrastructure for Security:-
- Around the world, the internet infrastructure that Google has is probably the most secure.
- Google's security and piracy policies are applicable to the apps developed using Google's infrastructure.

2) Scalability:
- For any app's success, this is among the deciding factors.
- Google creates its own apps using GFS, BigTable and other such technologies, which are available to you when you utilise the google app engine to create apps.

③ Performance and Reliability:
- Google is among the leadecs worldwide among global brands.
- The app engine prorides the same reliability and performance as any other Google product.

④ Cost savings:-
- You don't have to hire engineers to mandge your servers or to do that youeself. You can invest the money saved into other parts of your business.

⑤ Platform gndependence:
- You can move all your data to another environment without any difficulty as there is not many dependencies on the app engine platform.

& Steps to gnstall and configure Google App Engines-
- Create a Google cloud platform project, if you don't have one already.
- Make sure that Python 2.7 is installed on your system.
- Download the archive file best suited to your operating system Most machines will run the 64-bit package. If you'd like to check, run uname -m to verify if you're running a 64-bit system.
- Extract the archive to any location on your file system preferably, your Home folder. On Linux you can extract the archive file by running this command:
tar zxvf [ARCHIVE_FILE] google-cloud-sdk
- If you're having trouble getting the gcloud command to work, ensure your $path is defined appropriately. Use the install script to add cloud SDK tools to your path. You will be able to opt-in to command-completion for your bash shell & usage statistics collection during the installation

process. Run the script using this command:
./google-cloud-sdk/install.sh
Restract your terminal for the changes to take effect.

Initialise the SDK:

1) Run the following at a command prompt
gcloud init
To prevent the command from launching a web browser, use 'gcloud init --console-only' instead.

2) Accept the option to login using your Google account.
To continue, you must login would you like to login (Y/n)? Y

3) On your browser, log in to your Google user account when prompted and click Allow to grant permission to access Google cloud Platform resources.

4) At the command prompt, select a cloud platform project from the list of those where you have owner, Editor or Viewer permissions:
Pick cloud project to use : 1) [my-project-1]
2) [my-project-2]
Please enter your numeric choice:
If you have only one project, gcloud init selects it for you.

5) If you have the Google compute Engine API enabled, gcloud init allows you to choose a default compute engine zone:
Which compute zone you would like to use as project default?
1) [asia-east1-a]
2) [asia-east1-b]
14) Do not use default zone.
Please enter your numeric choice:

6) gcloud init confirms that you have complete the setup steps successfully:

gcloud has now been configured!
You can use [gcloud config] to change more gcloud settings.
Your active configuration is: [default]

Run core gcloud commands.

1) To list accounts whose credentials are stored on the local system.

gcloud auth list

gcloud displays a list of credentialed accounts:

ACTIVATE ACCOUNT
example-user1@gmail.com
example-user2@gmail.com

2) To list properties in your active SDK configuration.

gcloud config list

gcloud displays list of properties:

[core]
account = example-user-1@gmail.com
disable_usage_reporting = false
project = example-project

3) To view information about your cloud SDK installation & the active SDK configuration.

gcloud info

4) To view information about gcloud commands & other topics from the cloud command line:

gcloud help

Conclusion:-

Therefore we have successfully installed and configured Google App Engine. Google App Engine is designed to host applications with many simultaneous users.

Short Questions:-

Q1) What is the use of Google App Engine?

→ Google App Engine is a fully managed, serverless platform used for developing and hosting web applications at scale.

Q2) What are the advantages of Google App Engine?

→ Advantages of GAE are: 1) All-time availability
2) Ensure faster time to market
3) Easy to use platform
4) Diverse set of APIs
5) Increased savings & scalability & improved savings

Q3) What is the use of gcloud init command?

→ gcloud init command confirms that you have complete the st setup steps successfully.

Q4) What are the uses of Google App Engine?

→ Using GAE, you can choose from several popular languages, libraries and frameworks to develop your apps, and then let App Engine take care of provisioning servers and scaling your app instances based on demand.

Assignment No-03

* Title:- Creating an Application in Salesforce.com using Apex programming language.

* Theory:

What is Apex?

- Apex is a proprietary lang developed by the salesforce.com
- Apex is a strongly typed, object-oriented programming lang. that allows developers to execute the flow & transaction control statements on the Force.com platform server in conjunction with calls to the Force.com API.
- It has a Java like syntax and acts like db stored procedures It enables the developers to add business logic to most system events, including button clicks, related record updates, and Visual Force pages. Apex code can be initiated by web service requests and from triggers on objects. Apex is included in Performance edition, Unlimited edition, Enterprise Ed & Developer Ed

Features of Apex as a language:

* Integrated:
- Apex has built in support for DML operations like INSERT, UPDATE, DELETE and also DML Exception Handling. It has support for inline SOQL & SOSL query handling which returns the set of sObject records.

* Java like syntax & easy to use:

Apex is easy to use as it uses the syntax like Java. For ex: variable declaration, loop syntax & conditional statements.

* Strongly integrated with Data
  Data focused and designed to execute multiple queries and DML statements together.
* Strongly Typed
* Multitenant Environment
  Apex runtime engine is designed to guard closely against runaway code, preventing it from monopolizing shared resources. Any code that violates limits fails with easy-to-understand error messages.
* Upgrades automatically
* Easy Testing.

When can developer use Apex:-
Apex should be used when we are not able to implement the complex business functionality using the pre-built and existing out of the box functionalities.

Apex Applications:
- Create web services with integrating other systems.
- Create email services for email blast or email setup
- Perform complex validation over multiple objects at the same time & also custom validation implementation.
- Create complex business processes that are not supported by existing workflow functionality or flows.
- Create custom transactional logic (logic that occurs over the entire transaction, not just with a single record or object) like using the db methods for updating the records.
- Perform some logic when a record is modified or modify the related objects record when there is some event which has caused to the trigger to fire.

* Flow of actions :-
There are 2 sequence of actions when the developer saves the code & when an end user performs some action which invokes the apex code as shown below:

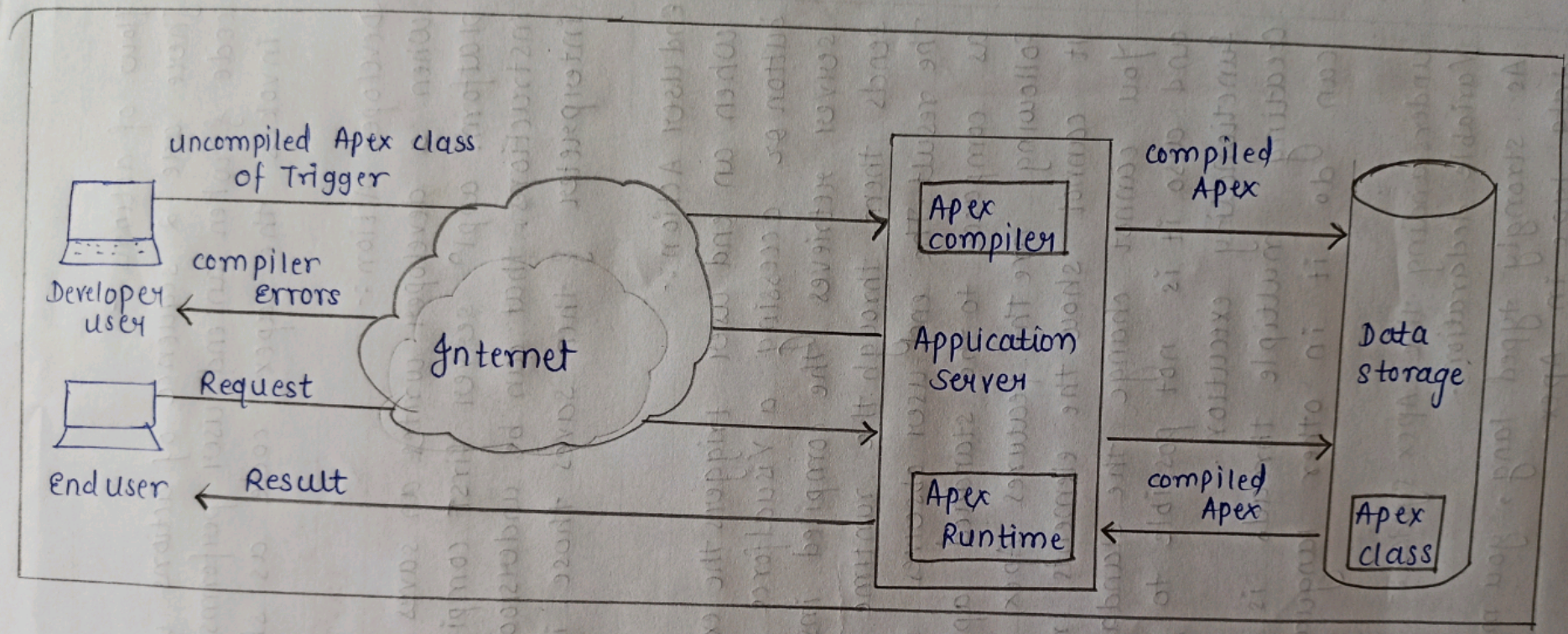
Developer Action :-
When a developer writes an saves Apex code to the platform the platform appl^n server first compiles the code into a set of instructions that can be understood by the Apex Runtime interpreter & then saves those instructions as metadata.

End User Action :-
When an end user triggers the execution of Apex, by clicking a button or accessing a Visualforce page, the platform application server retrieves the compiled instructions from the metadata & sends them through the runtime interpreter before returning the result. The end-user observes no differences in execution time as compared to the standard application platform request.

- Following are the features Apex does not support :-
  - It cannot show the elements in User Interface
  - You cannot change the standard SFDC provided functionality and also it is not possible to prevent the standard functionality execution.
  - Creating multiple threads is also not possible as we can do it in other languages.

* Understanding the Apex Syntax :-
- Variable declaration :
As strongly typed lang, you must declare every variable with data type in Apex.

Working structure of Apex:-



- SOQL query:
This will be used to fetch the data from salesforce db.
- loop statement :
This loop statement is used for iterating over a list or iterating over a piece of code for a specified number of times.
- flow control statement:
The if statement is used for flow control in this code. Based on certain conditions, it is decided whether to go for execution of the particular piece of code.
- DML statement:-
Performs the records insert, upsert, update, delete operation on the records in db. for ex :-

* Apex code Development Tools:-
In all the editions, we can use any of the following three tools to develop the code:-
- Force.com Developer console
- Force.com IDE
- code Editor in the Salesforce User Interface.

* Conclusion :-
Thus we have studied how to create and run an application in salesforce developers site by using APEX programming language.

* Short questions:-

Q1. What is Apex?

→ Apex is a strongly-typed, object-oriented programming language that allows developers to execute the flow & transaction control statements.

Q2. What are the features of Apex language?

→ 1. Integrated
2. Java like syntax
3. Easy to use
4. Strongly integrated w/ data
5. Strongly Typed
6. Multitenant Environment.
7. Upgrades Automatically
8. Easy Testing.

Q3. What are the tools required for developing Apex?

→ - force.com Developer console
- force.com IDE
- Code Editor in the salesforce ~~the~~ user interface.

Q4. what is trigger?

→ Triggers are the SQL codes that are automatically executed in response to certain events on a particular table

Q5. what is salesforce.com?

→ - Salesforce, Inc. is an American cloud-based software company.
- It provides customer relationship management s/w and applications focused on sales, customer service, marketing automation, e-commerce, analytics and application development.

Assignment No-04

* Title:- Design and develop custom Application (Mini-Project) using salesforce cloud.

* Theory:-

Introduction:

Salesforce is the primary enterprise offering within the Salesforce platform. It provides companies with an interface for case management & task management, and a system for automatically routing and escalating important events. The Salesforce customer portal provides customer the ability to track their own cases, includes a social networking plug-in that enables the user to join conversation about their company on social networking websites, provides analytical tools and other services using email alert, Google search and access to customer's entitlement and contracts.

Lightning Platform:-

Lightning platform (also known as force.com) is a platform as a service (Paas) that allows developers to create add-on applications that integrate into the main salesforce.com application.

Force.com applications are built using declarative tools, backed by Lightning and apex and Lightning and Visual force. The force.com platform typically receives three complete releases a year.

community cloud:-

Provides salesforce customers the ability to create online

web properties for external collaboration, customer service channel sales and other custom portals in their instance of Salesforce.

Salesforce Sales cloud:-

- Salesforce Sales cloud is a customer Relationship Management (CRM) platform designed to support sales, marketing & customer support in both business-to-business (B2B) & Business-to-custom (B2C) contexts.
- Salescloud is a fully customizable product that brings all the customer information together in an integrated platform that incorporates marketing, lead generation, sales, customer service and business analytics & prorides access to thousands of applications through the App Exchange.
- The platform is prorided as Software as a service (SAAS) for browser based access.

THA real time social feed for collaboration allows users to share information or ask questions of the user community.

Create custom Apps for Salesforce Classic:

If you've already created the objects like, tabs and fields you need for your app, follow these steps.

1. From setup, enter Apps in the ~~gli~~ Quick find box, then select Apps.
2. Click New
3. If the salesforce console is available, select whether you want to define a custom app or a salesforce console.
4. Give the app a name and description. An app name can have a max of 40 characters including spaces.

5. Optionally, brand your app by giving it a custom logo.
6. select with items to include in the app.
7. Optionally, set the default landing tab for your new app using the Default landing tab drop-down menu below the list of selected tabs. This determines the first tab a user sees when logging into this tab app.
8. choose which profiles the app will be visible to.
9. Check the Default box to set the app as that profiles default app, meaning that new users with the profile see this app the first time they log in. Profiles with limits are excluded from this list.
10. click save.

* conclusion:-
Thus we have successfully completed this assignment in which we have designed custom Application using Salesforce cloud.

* short Questions:

Q1) what is lighting platform?
Lightning platform (also known as force.com) is a platform as a service (Paas) that allows developers to create add-on applications that integrate into the main salesforce application

Q2) what is meant by community cloud?
community cloud provides salesforce customers the ability to create online web properties for external collaboration, customer service, channel sales, and other customer portals in their instance of salesforce.

Q3) what is salesforce sale cloud ?

salesforce sales cloud is a customer relationship management (CRM) platform designed to support sales, marketing & customer in both Business-to-Business (B2B) and Business-to-customer (B2C) contexts.

Q4) what is the difference b/w custom application and console application in sales force ?

- A custom application is a collection of tabs, objects etc that function together to solving a particular problem
- A console application uses a specific Salesforce UI-the console. console applications are intended to enhance productivity by allowing everything to be done from a single, tabbed, screen.