Assignment Three

Part A

1. [Marks: 15] What is an Intrusion Detection System? Is it possible to implement an Intrusion Detection System on this dataset? Explain the workflow as described in the paper for implementing Intrusion Detection System.

   Ans:

   Intrusion Detection System is where anomalous behavior or attacks in a system or network are detected, analyzed, and monitored. There are three methods to detect attacks. One signature based. Two Anomaly based and third one is Hybrid based detection.

   Yes, it is possible, the data set has attributes and the class attributes which indicates whether a given instance is a normal instance or an attack. In order to implement the IDS in a given dataset on apache spark first we need to load dataset and export it to RDD. We will do data preprocessing in order to standardize our data, change categorical variables in to numerical if our model only accept numerical variables etc. Third step is feature selection; we need to select top features only using various methods the method used in this paper is chiSqselector. Fourth step is to split our data in to test and training data set if we are using supervised ML methods and train our model with training dataset. Finally, we test and evaluate the model.

Part B

1. [Marks: 5] Read the below statements, choose the correct answer, and provide explanations. You can get more information by visiting this link. https://azure.microsoft.com/en-us/overview/what-is-paas/

Statements

I. A platform as a service (PaaS) solution that hosts web apps in Azure provides professional development services to continuously add features to custom applications.

Yes. As stated in the article, PaaS allows you to pay-as-you-go for the resources you require from a cloud service provider and access them over a secure internet connection. Furthermore, some PaaS services include scalability, allowing us to add new features to our own application as needed.

II. A platform as a service (PaaS) database offering in Azure provides built in high availability.

Yes. Using built-in software components, PaaS allows developers to design apps that include databases. High availability is one of the cloud features offered in PaaS.

2. [Marks: 5] Read the below statement, choose the correct answer, and provide explanations.

A relational database must be used when:

1. A dynamic schema is required
2. Data will be stored as key/value pairs
3. Storing large images and videos
4. Strong consistency guarantees are required

A relational database (RDMS) must be used (4)" Strong consistency guarantees are required.". As it is stated in https://docs.microsoft.com/en-us/azure/architecture/guide/technology-choices/data-store-overview

When high consistency guarantees are required, the relational database model comes in handy because all changes are atomic, and transactions always leave the data in a consistent state.

3. [Marks: 5] Read the below statement, choose the correct answer, and provide explanations.

When you are implementing a Software as a Service solution, you are responsible for:

1. Configuring high availability
2. Defining scalability rules
3. Installing the SaaS solution
4. Configuring the SaaS solution

Ans 4. Configuring the SaaS solution

Configuring SaaS solution is the only responsibility of customer when you implement SaaS. Everything else like High Availability, Scaling and installing are managed by the service provider.

3. [Marks: 5] Read the below statements, choose the correct answer, and provide explanations.

Statements

1. To achieve a hybrid cloud model, a company must always migrate from a private cloud model.
2. A company can extend the capacity of its internal network by using public cloud.
3. In a public cloud model, only guest users at your company can access the resources in the cloud.

Explanation

1. No -
To create a hybrid cloud, you may start with a public cloud and then integrate it with on-premises infrastructure.

2. Yes

A company can extend the capacity of its internal network by using the public cloud. When you need more capacity, Rather than paying for new on-premises hardware, you can implement a cloud environment and link it with your on-premises network .

3. No

It is not correct that only guests have access to cloud resources. You can grant access to the cloud resources to anyone who has an account.

5. [Marks: 5] Read the below statements, choose the correct answer, and provide explanations.

1. A cloud service that remains available after a failure occurs :Fault Tolerance
2. A cloud service that can be recovered after a failure occurs : Disaster recovery
3. A cloud service that performs quickly when demand increases: Dynamic Scalability
4. A cloud service that can be accessed quickly from the internet :Low Latency

Disaster recovery, Fault Tolerance, Low Latency, Dynamic Scalability