**Question 1:** **Describe how this application can be deployed in a cloud environment.**

Cloud computing is a new type of computing in which virtualized data are made available as internet networks that are dynamically scalable. Cloud computing is a new approach to designing and remotely accessing computing services. It encompasses all programmes provided as a service over the internet and the device infrastructure that runs in the datacenters that provide such services. Cloud refers to the hardware and applications used in data centres. Cloud computing represents a significant paradigm shift. Because of its ease of installation and execution, better user service, scalability, and cost control, most businesses are migrating their software to the cloud.

The three biggest challenges about switching to the cloud are reliability, affordability, and stability. Businesses use the cloud to run a variety of software, including customer relationship management (CRM), human resources (HR), accounting, and many more. Since thoroughly checking the security and stability of technology, some of the world's leading organisations transferred their systems to the cloud through salesforce.com.

Cloud computing refers to a collection of programmes that provide IT services as a service to remote users. Hardware, programming environments, and programmes are all included in the set of tools. Infrastructure as a service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) are the three types of cloud-based resources available (SaaS).

1. **Infrastructure as a Service (IaaS)**

Infrastructure as a Service (IaaS) is subdivided into the following categories:

1) Computation as a Service (CaaS), in which virtual machine-based servers are leased and paid every hour based on the virtual machine capability – primarily the CPU and RAM size, as well as the virtual machine's functionality, operating system, and installed applications.

2) Data as a Service (DaaS), in which users are paid per GB for data size and data transmission and have unrestricted storage capacity to store their data, regardless of its form.

1. **Platform as a Service (PaaS)**

Cloud platforms that offer Platform as a Service (PaaS) provide an implementation environment in which application servers can operate. The framework includes not only a pre-installed operating system, but also a programming-language-level interface that developers can use to design and construct device-specific applications.

1. Software as a Service (SaaS) Information-as-a-Service (SaaS) is a model for licencing software that is now deployed and operating on a cloud network that can be used on request. These on-demand apps may have been built and deployed on a cloud platform's PaaS or IaaS layer. SaaS uses a Subscribe/Rent model to bypass conventional device use, lowering the user's physical equipment implementation and management costs. Users will also be able to combine existing services to suit their needs in SaaS clouds.

**Models for Cloud Computing Deployment-**

The methods under which cloud applications are made accessible to customers are referred to as cloud implementation models. The below are the four implementation frameworks synonymous with cloud computing:

* Hybrid Cloud
* Private Cloud
* Public Cloud
* Community Cloud

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### Steps for deployment-

The programme will be deployed using the following steps:

• From a library of preconfigured virtual machine files, choose a load balancer, Web server, and database server appliance.

• Each component will be configured to create a unique picture. The load balancer is set up properly, and the programme is moved to a web server that runs Python and has all of the necessary components installed. After that, the database will be moved to an Amazon EC2 server running Microsoft Windows.

• Change the application's communication settings to connect with the database server.

• The custom code will then be fed into the current architecture, ensuring that modules met their unique specifications.