1. (a) Use Google Slides and prepare 5 slides on the topic “Cloud Computing”. Share these slides in a group in edit mode. 10

   (b) List the features of Oracle Virtual box. Also, list the steps of creating Virtual Machine (VM) on your computer. 10

Cloud Computing Google Slides

To create a Google Slides presentation on "Cloud Computing," follow these steps:

Open Google Slides

- Go to Google Slides and click on "Blank" to start a new presentation.

Title Slide

- **Title:** Cloud Computing
- **Subtitle:** An Introduction to Cloud Technology
- **Content:** Your name and date

Slide 2: What is Cloud Computing?

- **Title:** What is Cloud Computing?
- **Content:**
  - **Definition:** Cloud computing is the delivery of computing services over the internet (the cloud) to offer faster innovation, flexible resources, and economies of scale.
  - **Examples:** Google Drive, Dropbox, Amazon Web Services (AWS).

Slide 3: Types of Cloud Services

- **Title:** Types of Cloud Services
- **Content:**
  - **IaaS:** Infrastructure as a Service (e.g., AWS EC2, Google Compute Engine)
  - **PaaS:** Platform as a Service (e.g., Google App Engine, Heroku)
  - **SaaS:** Software as a Service (e.g., Google Workspace, Salesforce)

Slide 4: Benefits of Cloud Computing

- **Title:** Benefits of Cloud Computing
- **Content:**
  - **Cost Efficiency:** Pay only for what you use.
  - **Scalability:** Easily scale resources up or down.
  - **Flexibility:** Access services from anywhere.
  - **Security:** Advanced security features and compliance certifications.

Slide 5: Challenges of Cloud Computing

- **Title:** Challenges of Cloud Computing
- **Content:**
  - **Downtime:** Risk of service outages.
  - **Security:** Concerns over data privacy and security.
  - **Compliance:** Ensuring compliance with regulations.
  - **Cost Management:** Controlling the cost of cloud resources.

Share the Presentation

- Click on the "Share" button in the top right corner of Google Slides.
- Enter the email addresses of the people you want to share the presentation with.
- Ensure the sharing settings are set to "Anyone with the link can edit" if you want them to be able to edit the slides.

Features of Oracle VirtualBox and Steps to Create a Virtual Machine

Features of Oracle VirtualBox

- **Cross-Platform Support:** Available on Windows, macOS, Linux, and Solaris.
- **Guest Operating System Support:** Supports a wide range of guest operating systems, including Windows, Linux, macOS, and more.
- **Snapshots:** Ability to take snapshots of the current state of a virtual machine and revert back to them.
- **Seamless Mode:** Integrate guest applications with the host desktop, allowing for seamless interaction.
- **Shared Folders:** Share folders between the host and guest systems for easy file transfer.
- **Virtual Network Adapters:** Support for multiple virtual network adapters, including bridged, NAT, and host-only networking.
- **Extensible:** Support for third-party extensions and plug-ins.
- **Command Line Interface:** Full control over VirtualBox via a command line interface (VBoxManage).
- **3D Graphics Acceleration:** Support for 3D graphics acceleration for better performance of graphical applications.
- **Remote Desktop Protocol (RDP):** Built-in support for connecting to virtual machines via RDP.

Steps to Create a Virtual Machine in Oracle VirtualBox

1. **Download and Install VirtualBox:**
    - Go to the VirtualBox website.
    - Download the installer for your operating system.
    - Run the installer and follow the on-screen instructions to install VirtualBox.
2. **Open VirtualBox:**
    - Launch VirtualBox from your applications menu or start menu.
3. **Create a New Virtual Machine:**
    - Click the "New" button in the VirtualBox Manager.
    - Enter a name for your virtual machine.
    - Select the type and version of the operating system you want to install.
4. **Allocate Memory:**
    - Choose the amount of RAM to allocate to the virtual machine. A minimum of 2GB is recommended for modern operating systems.
5. **Create a Virtual Hard Disk:**
    - Select "Create a virtual hard disk now" and click "Create."
    - Choose the hard disk file type (VDI is recommended).
    - Decide whether to use a dynamically allocated or fixed-size disk. A dynamically allocated disk grows as you add data to it, while a fixed-size disk takes up the specified amount of space immediately.
    - Set the size of the virtual hard disk and click "Create."
6. **Configure Virtual Machine Settings (Optional):**
    - Select your virtual machine and click "Settings."
    - Configure settings such as system, display, storage, audio, network, USB, and shared folders as needed.
7. **Install the Operating System:**
    - Select your virtual machine and click "Start."
    - Choose the installation media (ISO file) for the operating system you want to install.
    - Follow the on-screen instructions to complete the installation of the operating system.
8. **Install VirtualBox Guest Additions:**
    - After installing the operating system, go to the "Devices" menu and select "Insert Guest Additions CD image."
    - Follow the prompts to install the Guest Additions, which provide enhanced features and performance.
9. **Configure Shared Folders (Optional):**
    - Go to "Settings" -> "Shared Folders" and add a new shared folder to enable file sharing between the host and guest.
10. **Start Using Your Virtual Machine:**
    - Start your virtual machine from the VirtualBox Manager and use it like a regular computer.

2. Write R program for the following income data of 10 persons: 20

25,000	35,000	30,000	45,000	29,000
27,000	47,000	51,000	25,000	39,000

Write a R program to create a frequency distribution in the three classes:

20,000 – 30,000

30,000 – 40,000

40,000 – 50,000

Also write R program to draw appropriate chart for the frequency distribution.

```
# Given income data
income <- c(25000, 35000, 30000, 45000, 27000, 47000, 51000, 25000, 20000, 29000, 39000)

# Define the class intervals
breaks <- c(20000, 30000, 40000, 50000, 60000) # Adjusted to include the highest value

# Create a frequency distribution
freq_table <- cut(income, breaks = breaks, right = FALSE, include.lowest = TRUE)
freq_dist <- table(freq_table)

# Print the frequency distribution
print(freq_dist)

# Save the bar chart as a PNG file
png("frequency_distribution_bar_chart.png")
barplot(freq_dist, main = "Frequency Distribution of Income",
        xlab = "Income Classes", ylab = "Frequency",
        col = "blue", border = "black")
dev.off()

# Save the histogram as a PNG file
png("frequency_distribution_histogram.png")
hist(income, breaks = breaks, main = "Histogram of Income",
     xlab = "Income", ylab = "Frequency", col = "green", border = "black", right = FALSE)
dev.off()
```