

Week 3

Sai Kumar Murarishetti  
Lewis ID: 30079224

# Project 1

## Week 3

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1. Linux server my estimation for 9 servers and EBS 40 GB

<https://calculator.aws/#/estimate?id=f72e370c67fcbb43811fb97a33fb30f8de33605e>

The screenshot shows the AWS Pricing Calculator interface. At the top, there's a navigation bar with the AWS logo, 'pricing calculator', and links for Feedback, Language (English), Contact Sales, and Create an AWS Account. Below this, the page title is 'My Estimate' with an 'Edit' link. On the right, there are 'Export' and 'Share' buttons. The main content area is divided into two sections. The left section, titled 'Estimate summary', shows a table with three columns: 'Upfront cost' (0.00 USD), 'Monthly cost' (842.82 USD), and 'Total 12 months cost' (10,113.84 USD, including upfront cost). The right section, titled 'Getting Started with AWS', has buttons for 'Get started for free' and 'Contact Sales'. Below these sections is a 'My Estimate' section with a search bar and a table of resources. The table has columns for Service Name, Status, Upfront cost, Monthly cost, Description, Region, and Config Summary. One resource is listed: Amazon EC2, with a status of '-', an upfront cost of 0.00 USD, a monthly cost of 842.82 USD, a description of 'saikumarLinuxserver', a region of 'US East (Ohio)', and a config summary of 'Tenancy (Shared Inst...'. At the bottom, there's a footer with links for Privacy, Site terms, Cookie preferences, and a copyright notice for 2023 Amazon Web Services, Inc.

Service Name	Status	Upfront cost	Monthly cost	Description	Region	Config Summary
Amazon EC2	-	0.00 USD	842.82 USD	saikumarLinuxserver	US East (Ohio)	Tenancy (Shared Inst...)

2. Red Hat server my estimation for 8 servers EBS 40 GB.

<https://calculator.aws/#/estimate?id=b4ae2939f6030cab5dfbeaff0d1d22c365970546>

The screenshot shows the 'EC2 specifications' section of the AWS Pricing Calculator. It includes a 'Description' field with the value 'saikumarredhat'. Below this, there are two dropdown menus: 'Choose a location type' (set to 'Region') and 'Choose a Region' (set to 'US East (Ohio)'). The 'EC2 specifications' section has two sub-sections: 'Tenancy' and 'Operating system'. The 'Tenancy' section has a dropdown menu set to 'Shared Instances'. The 'Operating system' section has a dropdown menu set to 'Red Hat Enterprise Linux with HA'.

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Operating system

Choose the operating system to run your Amazon EC2 instances on.

Red Hat Enterprise Linux with HA

Workloads

Choose the graph that best represents your monthly workload

☒ Constant usage

☐ Daily spike traffic

☐ Weekly spike traffic

☐ Monthly spike traffic

Number of instances

Please specify the total number of instances that you need each month.

8

EC2 Instances (664)

Based on your inputs, this is the lowest-cost EC2 instance: **t4g.micro**

Chosen instance: **m4.2xlarge** | Family: **m4** | 8vCPU | 32 GiB Memory

Search instance type

Based on your inputs, this is the lowest-cost EC2 instance: **m4.2xlarge**

Chosen instance: **m4.2xlarge** | Family: **m4** | 8vCPU | 32 GiB Memory

Search instance type

Instance family [Info](#)

vCPUs

Memory (GiB)

Network performance

Any Instance family

Any vCPUs

Any Memory (GiB)

Any Network Performance

☒ Show only current generation instances.

< 1 > ⚙

	Instance name	vCPUs	Memory	Network Performance	Storage	On-Demand Hourly Cost	CurrentGeneration	Potential Effective Hourly Cost (Savings %)
<input checked="" type="radio"/>	m4.2xlarge	8	32 GiB	High	EBS only	0.565	Yes	0.3091 (45%)

Estimated commitment price based on the following selections:  
Instance type: **m4.2xlarge** Operating system: **Red Hat Enterprise Linux with HA**

Select the container and options to find your best price

☐ Compute Savings Plans

One plan that automatically applies to all usage on EC2, Fargate, and Lambda. Up to 66% discount. [Learn more](#)

Reservation term

☐ 1 year

☒ 3 year

Payment Options

☒ No upfront

☐ Partial upfront

☐ All upfront

☐ EC2 Instance Savings Plans

Get deeper discount when you only need one instance family and region. Up to 72% discount. [Learn more](#)

Reservation term

☐ 1 year

☒ 3 year

Payment Options

☒ No upfront

☐ Partial upfront

☐ All upfront

☒ On-Demand

Maximize flexibility. [Learn more](#)

Expected utilization

Enter the expected usage of Amazon EC2 instances

Usage

100

Usage type

Utilization percent per month

☐ Spot Instances

Minimize cost by leveraging EC2's spare capacity. Recommended for fault tolerant and interruption tolerant applications. [Learn more](#)

The historical average discount for m4.2xlarge is 0%

Assume percentage discount for my estimate

0

☒ Actual spot instance pricing varies

With spot instances, you pay the spot price that's in effect

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The screenshot shows the AWS Pricing Calculator interface. At the top, there's a navigation bar with the AWS logo, 'pricing calculator', and links for 'Feedback', 'Language: English', 'Contact Sales', and 'Create an AWS Account'. Below this, the 'My Estimate' section is active, showing a summary of costs: Upfront cost (0.00 USD), Monthly cost (3,325.20 USD), and Total 12 months cost (39,902.40 USD). To the right, there's a 'Getting Started with AWS' section with buttons for 'Get started for free' and 'Contact Sales'. Below the summary, there's a table of services. The table has columns for Service Name, Status, Upfront cost, Monthly cost, Description, Region, and Config Summary. The only service listed is Amazon EC2, with a status of '-', an upfront cost of 0.00 USD, a monthly cost of 3,325.20 USD, a description of 'saikumarredhat', and a region of 'US East (Ohio)'. The config summary is 'Tenancy (Shared Inst...'. There are also buttons for 'Duplicate', 'Delete', 'Move to', 'Create group', 'Add support', and 'Add service'.

aws pricing calculator

Feedback Language: English Contact Sales Create an AWS Account

AWS Pricing Calculator > My Estimate

My Estimate Edit

Export Share

Estimate summary Info

Upfront cost 0.00 USD Monthly cost 3,325.20 USD Total 12 months cost 39,902.40 USD Includes upfront cost

Getting Started with AWS

Get started for free Contact Sales

My Estimate Duplicate Delete Move to Create group Add support Add service

Find resources

Service Name	Status	Upfront cost	Monthly cost	Description	Region	Config Summary
Amazon EC2	-	0.00 USD	3,325.20 USD	saikumarredhat	US East (Ohio)	Tenancy (Shared Inst...)

3. Red Hat server and my estimation for 7 server and EBS 40 GB.

<https://calculator.aws/#/estimate?id=cbcc295cc6021a175865ab925d2c11b5a7882aa4>

The screenshot shows the 'EC2 Instances' section of the AWS Pricing Calculator. It displays the lowest-cost EC2 instance based on inputs: m5.xlarge. The chosen instance is m5.xlarge, with a family of m5, 4 vCPUs, and 16 GiB Memory. Below this, there's a search bar for instance types, currently showing 'm5.xlarge'. There are also filters for Instance family, vCPUs, Memory (GiB), and Network performance. A checkbox 'Show only current generation instances' is checked. At the bottom, there's a table of instance options. The table has columns for Instance name, vCPUs, Memory, Network Performance, Storage, On-Demand Hourly Cost, CurrentGeneration, and Potential Effective Hourly Cost (Savings %). The only instance listed is m5.xlarge, with 4 vCPUs, 16 GiB Memory, Network Performance of 'Up to 10 Gigabit', Storage of 'EBS only', On-Demand Hourly Cost of 0.287, CurrentGeneration of 'Yes', and Potential Effective Hourly Cost (Savings %) of 0.1609 (44%).

EC2 Instances (1)

Based on your inputs, this is the lowest-cost EC2 instance: m5.xlarge

Chosen instance: m5.xlarge | Family: m5 | 4vCPU | 16 GiB Memory

Search instance type

m5.xlarge

Instance family Info vCPUs Memory (GiB) Network performance

Any Instance family Any vCPUs Any Memory (GiB) Any Network Performance

Show only current generation instances.

Instance name	vCPUs	Memory	Network Performance	Storage	On-Demand Hourly Cost	CurrentGeneration	Potential Effective Hourly Cost (Savings %)
m5.xlarge	4	16 GiB	Up to 10 Gigabit	EBS only	0.287	Yes	0.1609 (44%)

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The screenshot shows the AWS Pricing Calculator interface. At the top, there's a navigation bar with the AWS logo, 'pricing calculator', and links for Feedback, Language (English), Contact Sales, and a button to 'Create an AWS Account'. A green banner at the top of the main content area says 'Successfully added Amazon EC2 estimate.' Below this, the 'My Estimate' section is active, showing an 'Estimate summary' with the following costs: Upfront cost of 12,570.60 USD, Monthly cost of 22.40 USD, and a Total 12 months cost of 12,839.40 USD (including upfront cost). To the right, a 'Getting Started with AWS' section offers 'Get started for free' and 'Contact Sales' buttons. Below the summary, there's a table of resources. The table has columns for Service Name, Status, Upfront cost, Monthly cost, Description, Region, and Config Summary. One resource is listed: Amazon EC2, with a status of '-', an upfront cost of 12,570.60 USD, a monthly cost of 22.40 USD, a description of 'saikumarredhat', and a region of 'US East (Ohio)'. The config summary for this resource is 'Tenancy (Shared instances), Operating system (...)'. At the bottom of the table, there are buttons for 'Duplicate', 'Delete', 'Move to', 'Create group', 'Add support', and 'Add service'.

Service Name	Status	Upfront cost	Monthly cost	Description	Region	Config Summary
Amazon EC2	-	12,570.60 USD	22.40 USD	saikumarredhat	US East (Ohio)	Tenancy (Shared instances), Operating system (...)

4. Windows server and my estimation for 6 server and EBS 40 GB.

<https://calculator.aws/#/estimate?id=cd3be98463c2aa606c631bb0065511929e3748bd>

The screenshot shows the AWS Pricing Calculator interface for a different estimate. The 'Estimate summary' section displays: Upfront cost of 41,154.48 USD, Monthly cost of 1,162.38 USD, and a Total 12 months cost of 55,103.04 USD (including upfront cost). The 'Getting Started with AWS' section remains the same. The table below shows one resource: Amazon EC2, with a status of '-', an upfront cost of 41,154.48 USD, a monthly cost of 1,162.38 USD, a description of 'saikumarwindowsserver', and a region of 'US East (Ohio)'. The config summary is 'Tenancy (Shared inst...'. At the bottom, there's an 'Acknowledgement' section stating that the AWS Pricing Calculator provides only an estimate of AWS fees and doesn't include any taxes that might apply. A 'Learn more' link is provided.

Service Name	Status	Upfront cost	Monthly cost	Description	Region	Config Summary
Amazon EC2	-	41,154.48 USD	1,162.38 USD	saikumarwindowsserver	US East (Ohio)	Tenancy (Shared inst...)

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Addition answer:

- a. The pricing of 1-year and 3-year reserved instances differs, as does the operation of reserved instances.

Difference in Cost:

The price for a 3-year reserved instance is usually less than that of a 1-year reserved instance. This is due to the reason that a three-year commitment allows for a larger upfront payment, which over the longer period results in greater cost savings.

How Reserved Instances Operate: Reserved Instances entail a fixed-term (1 or 3 year) commitment to a particular instance type in a given region. Users get a big discount over on-demand pricing in exchange for this commitment. Capacity assurance is provided by reserved instances, which guarantee that the designated instances will be available even during periods of high demand.

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### b. AWS calculator

#### 1. Red Hat Linux server (Oregon).

The screenshot shows the AWS Pricing Calculator interface for configuring an Amazon EC2 instance. The 'Configure Amazon EC2' modal is open, displaying the following details:

- Description:** Redhat
- Choose a location type:** Region
- Choose a Region:** US West (Oregon)
- EC2 specifications:**
  - Tenancy:** Shared Instances
  - Operating system:** Red Hat Enterprise Linux
- Costs:** Total Upfront cost: 0.00 USD, Total Monthly cost: 46.87 USD
- Buttons:** Show Details, Save and view summary, Save and add service

#### Red Hat Ireland location.

The screenshot shows the AWS Pricing Calculator interface for configuring an Amazon EC2 instance in the Ireland region. The 'Configure Amazon EC2' modal is open, displaying the following details:

- Description:** SaikumarIreland
- Choose a location type:** Region
- Choose a Region:** Europe (Ireland)
- EC2 specifications:**
  - Tenancy:** Shared Instances
  - Operating system:** Red Hat Enterprise Linux
- Costs:** Total Upfront cost: 0.00 USD, Total Monthly cost: 47.67 USD
- Buttons:** Show Details, Save and view summary, Save and add service

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### 2. Windows Oregon.

The screenshot shows the 'Configure Amazon EC2' interface in the AWS Pricing Calculator. The configuration is as follows:

- Name:** SaikumarWindows
- Choose a location type:** Region
- Choose a Region:** US West (Oregon)
- EC2 specifications:**
  - Tenancy:** Shared Instances
  - Operating system:** Windows Server
- Workload:** Workload
- Costs:** Total Upfront cost: 0.00 USD, Total Monthly cost: 3.80 USD
- Buttons:** Show Details, Save and view summary, Save and add service

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### Windows server (Ireland Location)

The screenshot shows the 'Configure Amazon EC2' interface in the AWS Pricing Calculator, configured for the Ireland region. The configuration is as follows:

- Name:** SaikumarWindows
- Choose a location type:** Region
- Choose a Region:** Europe (Ireland)
- EC2 specifications:**
  - Tenancy:** Shared Instances
  - Operating system:** Windows Server
- Workload:** Workload
- Costs:** Total Upfront cost: 0.00 USD, Total Monthly cost: 4.31 USD
- Buttons:** Show Details, Save and view summary, Save and add service

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3. The plan for different location varies for 1 dollar in REDHAT where the US west (Oregon) is 46.87 and Ireland is 47.87 and in Windows the price increase in Ireland by 0.51 where the price in Oregon (3.80) and Ireland (4.31).
4. Yes, it increases depends on the region, has we on observed in above question where we change the location from Oregon to Ireland the price increase by 1 dollar with same number of server and configuration.
5. The windows EC2 is **More Expensive** than Red Hat as we observed in **Project#1** table item 3 and 4 windows server and REDHAT. There is straight price difference. Reserved instances, spot instances, on-demand pricing, and other factors might affect the cost of using AWS, which modifies its pricing often.

c. **Partial Upfront:**

Involves reducing monthly fees by paying some of the instance cost upfront. people who wish to find a balance between one-time purchases and regular monthly bills can consider this option.

**Full Upfront:**

Requires an upfront deposit of the whole instance cost there are no ongoing monthly fees. This option has a higher upfront cost but offers the greatest total cost reduction over the time.

d. Spot Instances and Their Applicability to Applications That Run 24/7/365:

Spot Examples:

Spot instances offer more affordable spare EC2 capacity than on-demand instances. This idle capacity is bid upon by users, and instances are closed if the spot price is higher than the bid. Applications that can withstand interruptions and are fault-tolerant should use Spot Instances. 24x7x365 Use Cases.

Spot instances we can save money, but they might not be appropriate for applications that need to run without interruption all the time. If AWS needs the capacity back, Spot Instances can be terminated quickly. Reservable or on-demand instances are advised for applications that need to be available constantly.

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# Project 2

## Week 3

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### a. Cloud Service Model Selection:

For a small startup with a focus on Java and Python development, the most suitable cloud service model would be **Platform as a Service (PaaS)**.

- **Explanation:**
  - **IaaS (Infrastructure as a Service):** Involves managing infrastructure components like virtual machines, storage, and networking. It might be more than what a small startup needs, especially when the primary focus is on development rather than infrastructure management.
  - **PaaS (Platform as a Service):** Provides a platform that includes runtime environments, development frameworks, and other tools. Developers can focus on coding without dealing with underlying infrastructure complexities.
  - **SaaS (Software as a Service):** Offers complete software applications over the internet, but it might not be suitable for a startup that wants more control over the development process.

### b. AWS Elastic Beanstalk vs. Google App Engine:

- **AWS Elastic Beanstalk:**
  - **Description:** AWS Elastic Beanstalk is a fully managed service that simplifies the deployment and management of applications.
  - **Features:**
    - Supports multiple programming languages, including Java and Python.
    - Automatically handles capacity provisioning, load balancing, and application health monitoring.
    - Developers just need to upload their code; the platform takes care of the underlying infrastructure.
    - Can be used with other AWS services to enhance functionality.
- **Google App Engine:**
  - **Description:** Google App Engine is a serverless PaaS offering that allows developers to build and deploy applications without managing the infrastructure.

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- **Features:**

- Supports multiple programming languages, including Java and Python.
- Automatically scales applications based on demand.
- Provides a fully managed environment, allowing developers to focus solely on building applications.
- Supports real-time collaboration and version control.

**c. Heroku:**

- **Description:**

- Heroku is a cloud platform that simplifies the deployment, management, and scaling of applications.
- Supports various programming languages, including Java and Python.
- Abstracts away infrastructure concerns, allowing developers to deploy applications with minimal configuration.
- Offers add-ons, databases, and a marketplace for additional services.
- Particularly popular for its ease of use and quick deployment capabilities.

### 1. Heroku Postgres.

The screenshot shows the Heroku website's add-on page for Heroku Postgres. The page is titled "Heroku Postgres" and describes it as a "Reliable and powerful database as a service based on PostgreSQL. Starting at ~\$0.007/hour." The page is divided into several sections: "Connect, Use, and Develop", "Scale and Grow", and "Install Heroku Postgres". The "Install Heroku Postgres" section includes a "QUICK LINKS" sidebar with links to "Add-on Details", "Region Availability", "Plans & Pricing", "Documentation", and "Heroku Elements Terms of Use (Default)". The "SHAREABLE DETAILS" section includes "Shareable Across Apps" and "Multiple Installs/App". The "ADD-ON CATEGORY" section lists "Data Stores". The "LANGUAGE SUPPORT" section lists "CLOJURE", "GO", "JAVA", "NODE", "PHP", "PYTHON", "RUBY", and "SCALA". The "Connect, Use, and Develop" section includes a link to "Connect, Use, and Develop". The "Scale and Grow" section includes a link to "Scale and Grow".

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### 2. Region availability

#### Region Availability

The available application locations for this add-on are shown below, and depend on whether the application is deployed to a Common Runtime region or Private Space. [Learn More](#)

Common Runtime Private Spaces

REGION	AVAILABLE
United States	●
Europe	●



#### Install Heroku Postgres

##### QUICK LINKS

[Add-on Details](#)  
[Region Availability](#)  
[Plans & Pricing](#)  
[Documentation](#)  
[Heroku Elements Terms of Use \(Default\)](#)

##### SHAREABLE DETAILS

✓ Shareable Across Apps  
✓ Multiple Installs/App

##### ADD-ON CATEGORY

Data Stores

##### LANGUAGE SUPPORT

[CLOJURE](#) [GO](#) [JAVA](#) [NODE](#)  
[PHP](#) [PYTHON](#) [RUBY](#) [SCALA](#)

- d. Plans and Pricing for standard 3 number of Dynos 3 with Heroku Postgres 3 instances Standard type.

<https://www.heroku.com/pricing/estimates/57ee73cfa8aa5974f3cc359e4b266323fffc96b260225f5b953d3614b646c140>

Flexible pricing options, from personal projects to enterprise applications, and everything in between

Guided App Type Dynos Data Productivity & Support Salesforce

**Guided Price Estimator**  
Get hints and tips to help you estimate your costs.

KNOW WHAT YOU WANT  
Browse a list of app types to create your estimate.  
[Use the Unguided Estimator](#)

APP TYPE  
Estimate the costs to run your app on Heroku  
To start your estimate, choose the type of app that best represents what you're looking to build: from simple prototypes to production apps to enterprise-grade applications.

RELATED LINKS  
[How Heroku works](#)

**Latest estimate**  
Pricing for running Heroku Dynos (containers) is based on usage. Data services, some platform tools, and third-party add-ons offer tiered monthly pricing.  
To purchase these resources and provision apps, [go to Heroku dashboard](#) →

**App 1** SaiKumar Heroku [Edit app](#) **\$225**  
Production app

**Dyno** **\$75**  
**Standard 1X** **\$75**  
3 instances [Edit](#) [Remove](#)

[+ Estimate another app](#) Est. monthly cost **\$225**

[Copy link](#) [Email estimate](#) [Download PDF](#)

Note: this is only an estimate and may not represent final costs. Pricing may change at any time. Sales/use tax may be due on your purchase, and accordingly you may be required to report use tax to your state. [Learn more](#) →

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# Project 3

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a)

### 1. Microsoft.



### Microsoft 365 Business Premium

Subscription & account details

Sign-in details

Add payment, confirm & complete order

## Set up your subscription

Choose the number of users, subscription length and billing term you prefer.

How many people is this for?

12

Choose the length of your subscription

☒ 1 year - \$22.00 user/month, \$264.00 user/year

☐ 1 month - \$26.40 user/month

How often do you want to be billed?

Monthly

**Your order summary**

Microsoft 365 Business Premium  
1-year subscription, Pay \$264.00 a month for 12 users

---

Payment due today (tax not included) **\$264.00**

### Microsoft 365 Business Premium

**Product highlights** ^

- ✓ Get started quickly with documents, spreadsheets, presentations, and email
- ✓ Use Microsoft Teams to meet online and chat securely
- ✓ Help keep business data secure on your devices
- ✓ Get phishing and malware protection to guard against cyberthreats
- ✓ Manage new PCs and devices quickly and easily
- ✓ Back up and share files with a terabyte of cloud storage

Word

Excel

PowerPoint

Outlook


Teams collaboration hub

OneDrive cloud storage

SharePoint knowledge sharing

Exchange professional email

### 2. Microsoft for Yearly.



### Microsoft 365 Business Premium

Subscription & account details

Sign-in details

Add payment, confirm & complete order

## Set up your subscription

Choose the number of users, subscription length and billing term you prefer.

How many people is this for?

12

Choose the length of your subscription

☒ 1 year - \$22.00 user/month, \$264.00 user/year

☐ 1 month - \$26.40 user/month

How often do you want to be billed?

Yearly

**Your order summary**

Microsoft 365 Business Premium  
1-year subscription, Pay \$3,168.00 a year for 12 users

---

Payment due today (tax not included) **\$3,168.00**

[Next](#)

### Microsoft 365 Business Premium

**Product highlights** ^

- ✓ Get started quickly with documents, spreadsheets, presentations, and email
- ✓ Use Microsoft Teams to meet online and chat securely
- ✓ Help keep business data secure on your devices
- ✓ Get phishing and malware protection to guard against cyberthreats
- ✓ Manage new PCs and devices quickly and easily
- ✓ Back up and share files with a terabyte of cloud storage

Word

Excel

PowerPoint

Outlook

Teams collaboration hub

OneDrive cloud storage

SharePoint knowledge sharing

Exchange professional email

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### b) LibreOffice vs. Google Docs and Sheets:

#### **LibreOffice:**

- LibreOffice is an open-source office suite that includes applications for word processing, creating and editing spreadsheets, slideshows, diagrams, and drawings.
- It is a free and open-source alternative to commercial office suites.
- Offers compatibility with Microsoft Office formats and supports a wide range of file types.
- Suitable for users who prefer offline office applications without the need for an internet connection.

#### **Google Docs and Sheets:**

- Google Docs and Sheets are part of Google Workspace (formerly G Suite) and provide cloud-based solutions for word processing and spreadsheet creation.
- Documents and spreadsheets are stored in the cloud, allowing collaborative editing in real-time.
- Accessibility from any device with internet access.
- Integration with other Google Workspace apps for seamless collaboration.

#### **Comparison:**

- **LibreOffice** is suitable for users who prefer offline office applications and have no need for real-time collaboration. It's a robust, free alternative to Microsoft Office.
- **Google Docs and Sheets** are cloud-based solutions, emphasizing collaboration and accessibility. They are ideal for teams that need real-time collaboration and the flexibility of working from any device.