## (a) Three Primary Cloud Service Models

1.  **Infrastructure as a Service (IaaS):**
    IaaS provides virtualized computing resources over the internet. Users can rent virtual machines, storage, and networks.
    **Example in Software Development:**
    A development team can use Amazon EC2 instances to host their development and testing environments. They can spin up multiple VMs with different OS configurations to test their application across platforms.

2.  **Platform as a Service (PaaS):**
    PaaS delivers hardware and software tools over the internet, typically for application development. The platform is managed by the provider, so developers can focus on writing code.
    **Example in Software Development:**
    Using Google App Engine to deploy a Python web application. Developers upload their code, and Google handles scaling, load balancing, and server maintenance.

3.  **Software as a Service (SaaS):**
    SaaS delivers software applications over the internet, on a subscription basis. Users do not need to install or maintain the software.
    **Example in Software Development:**
    Using GitHub (a SaaS platform) for version control and collaboration. Developers push code to GitHub, manage pull requests, and track issues without managing the underlying infrastructure.

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## (b) What is Docker?

**Docker** is an open-source platform that enables developers to automate the deployment of applications inside lightweight, portable containers. Containers encapsulate an application and its dependencies, ensuring consistency across environments.

**Scenario:**

Imagine a team developing a Node.js application. Each developer may have different operating systems and Node versions installed. By using Docker, they

can create a container with a specific Node.js version and dependencies. This

ensures that the application runs the same way on every machine.

## Contribution to Development and Deployment:

- **Consistency:** Developers work in identical environments, reducing "it works on my machine" issues.
- **Isolation:** Each service (e.g., web app, database) can run in its own container.
- **Portability:** Containers can run on any system that supports Docker, simplifying deployment to staging or production.
- **Scalability:** Containers can be orchestrated with tools like Kubernetes for scaling applications.

(c)
```
C:\Users\25862>docker run -it --rm --name n8n -p 5678:5678 -v ${HOME}/n8n-data:/home/node/.n8n n8nio/n8n
Unable to find image 'n8nio/n8n:latest' locally
latest: Pulling from n8nio/n8n
9824c27679d3: Pull complete
87ab795ed18b: Download complete
4f4fb700ef54: Pull complete
6a088b2daae0: Pull complete
3d64802e5816: Download complete
23fe6350486d: Pull complete
c4a8c5e8e683: Downloading [===================>                            ]  60.82MB/151.2MB
3efaf331e66e: Download complete
016c0e952111: Pull complete
4307f681e63e: Download complete
9b94a1e882c2: Download complete
```

# n8n

## Set up owner account

**Email** *

202383930008@nuist.edu.cn

**First Name** *

**Last Name** *

**Password** *

8+ characters, at least 1 number and 1 capital letter

☐ I want to receive security and product updates

**Next**

```
Finished migration AddMockedNodesColumnToTestDefinition1733133775640
Starting migration AddManagedColumnToCredentialsTable1734479635324
Finished migration AddManagedColumnToCredentialsTable1734479635324
Starting migration AddStatsColumnsToTestRun1736172058779
Finished migration AddStatsColumnsToTestRun1736172058779
Starting migration CreateTestCaseExecutionTable1736947513045
Finished migration CreateTestCaseExecutionTable1736947513045
Starting migration AddErrorColumnsToTestRuns1737715421462
Finished migration AddErrorColumnsToTestRuns1737715421462
Starting migration CreateFolderTable1738709609940
Finished migration CreateFolderTable1738709609940
Starting migration CreateAnalyticsTables1739549398681
Finished migration CreateAnalyticsTables1739549398681
Starting migration UpdateParentFolderIdColumn1740445074052
Finished migration UpdateParentFolderIdColumn1740445074052
Starting migration RenameAnalyticsToInsights1741167584277
Finished migration RenameAnalyticsToInsights1741167584277
Starting migration AddScopesColumnToApiKeys1742918400000
Finished migration AddScopesColumnToApiKeys1742918400000
Starting migration ClearEvaluation1745322634000
Finished migration ClearEvaluation1745322634000
Starting migration AddWorkflowStatisticsRootCount1745587087521
Finished migration AddWorkflowStatisticsRootCount1745587087521
Starting migration AddWorkflowArchivedColumn1745934666076
Finished migration AddWorkflowArchivedColumn1745934666076
Starting migration DropRoleTable1745934666077
Finished migration DropRoleTable1745934666077
Starting migration AddProjectDescriptionColumn1747824239000
Finished migration AddProjectDescriptionColumn1747824239000
Starting migration AddLastActiveAtColumnToUser1750252139166
Finished migration AddLastActiveAtColumnToUser1750252139166
Starting migration AddScopeTables1750252139166
Finished migration AddScopeTables1750252139166
Starting migration AddRolesTables1750252139167
Finished migration AddRolesTables1750252139167
Starting migration LinkRoleToUserTable1750252139168
Finished migration LinkRoleToUserTable1750252139168
Starting migration RemoveOldRoleColumn1750252139170
Finished migration RemoveOldRoleColumn1750252139170
Starting migration AddInputsOutputsToTestCaseExecution1752669793000
Finished migration AddInputsOutputsToTestCaseExecution1752669793000
Starting migration LinkRoleToProjectRelationTable1753953244168
Finished migration LinkRoleToProjectRelationTable1753953244168
Starting migration CreateDataStoreTables1754475614601
Finished migration CreateDataStoreTables1754475614601
Starting migration ReplaceDataStoreTablesWithDataTables1754475614602
Finished migration ReplaceDataStoreTablesWithDataTables1754475614602


There are deprecations related to your environment variables. Please take the recommended actions to update your configuration:
 - DB_SQLITE_POOL_SIZE -> Running SQLite without a pool of read connections is deprecated. Please set `DB_SQLITE_POOL_SIZE` to a value hig
her than zero. See: https://docs.n8n.io/hosting/configuration/environment-variables/database/#sqlite
 - N8N_RUNNERS_ENABLED -> Running n8n without task runners is deprecated. Task runners will be turned on by default in a future version. P
lease set `N8N_RUNNERS_ENABLED=true` to enable task runners now and avoid potential issues in the future. Learn more: https://docs.n8n.io/
hosting/configuration/task-runners/
 - N8N_BLOCK_ENV_ACCESS_IN_NODE -> The default value of N8N_BLOCK_ENV_ACCESS_IN_NODE will be changed from false to true in a future versio
n. If you need to access environment variables from the Code Node or from expressions, please set N8N_BLOCK_ENV_ACCESS_IN_NODE=false. Lear
n more: https://docs.n8n.io/hosting/configuration/environment-variables/security/

[license SDK] Skipping renewal on init: license cert is not initialized
Version: 1.112.3

Editor is now accessible via:
http://localhost:5678

Press "o" to open in Browser.

000Owner was set up successfully
User survey updated successfully
```