

BIT\$ Finance

This is virtual trading application, a web app via which you can manage portfolios of stocks. Not only will this tool allow you to check real stock's actual prices and portfolio's values. It will also let you buy and sell stocks by querying IEX (<https://iextrading.com/developer/>) for stock's prices.

Once User registers he/she will get \$10000 (virtual) credited into his/her portfolio. It can be used to learn trading if you are new to stock market, as experimenting with real money in stock market without gaining proper knowledge can result in loss.

The application is deployed and tested on **Azure Cloud** and can be accessed using below link -

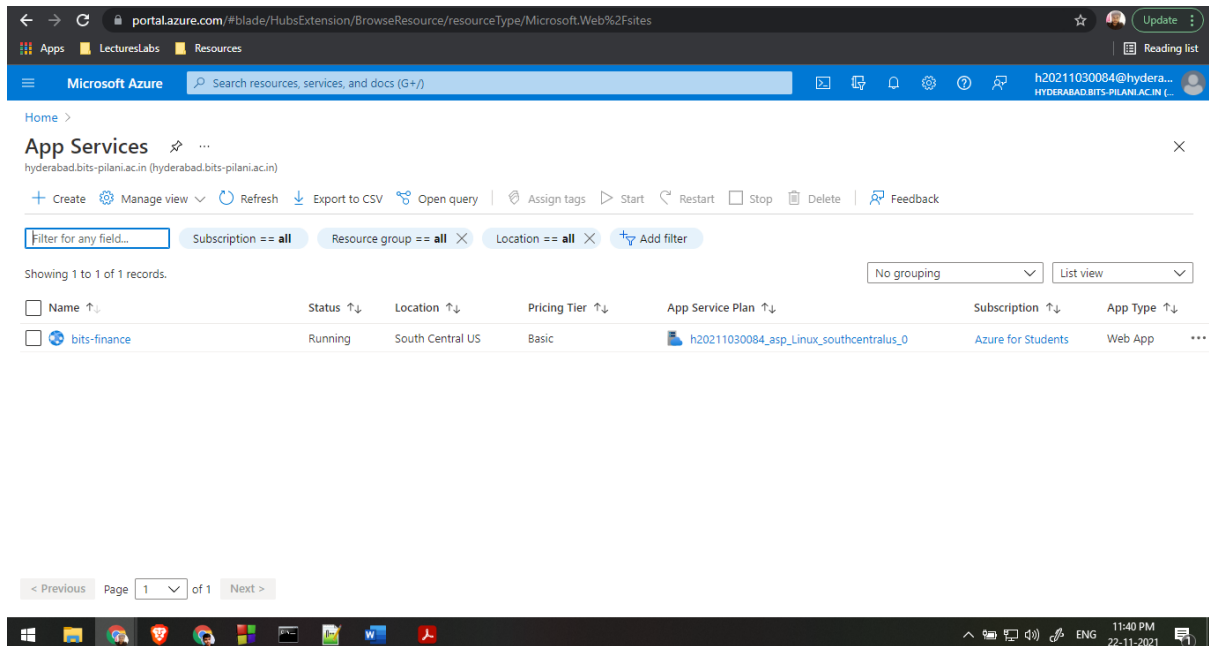
<https://bits-finance.azurewebsites.net/>

Azure CLI for deployment

```
C:\Users\cruse\OneDrive\Desktop\cloud-project\sample>az login
The default web browser has been opened at https://login.microsoftonline.com/organizations/oauth2/v2.0/authorize. Please continue the login in the web browser. If no web browser is available or if the web browser fails to open, use device code flow with 'az login --use-device-code'.
{
  "cloudName": "AzureCloud",
  "homeTenantId": "72f988bf-86f1-41af-91ab-2d7cd011db47",
  "id": "72f988bf-86f1-41af-91ab-2d7cd011db47",
  "isDefault": true,
  "managedByTenants": [],
  "name": "Azure for Students",
  "state": "Enabled",
  "tenantId": "72f988bf-86f1-41af-91ab-2d7cd011db47",
  "user": {
    "name": "h20211030084@hyderabad.bits-pilani.ac.in",
    "type": "user"
  }
}
```

```
C:\Users\cruse\OneDrive\Desktop\MyWork-master\Finance>az webapp up --sku B1 --name bits-finance
The webapp 'bits-finance' doesn't exist
Creating AppServicePlan 'cruse-000000000000_southcentralus_0' ...
Creating webapp 'bits-finance' ...
Configuring default logging for the app, if not already enabled
Creating zip with contents of dir C:\Users\cruse\OneDrive\Desktop\MyWork-master\Finance ...
Getting scm site credentials for zip deployment
Starting zip deployment. This operation can take a while to complete ...
Deployment endpoint responded with status code 202
You can launch the app at http://bits-finance.azurewebsites.net
{
  "URL": "http://bits-finance.azurewebsites.net",
  "appserviceplan": "cruse-000000000000_southcentralus_0",
  "location": "southcentralus",
  "name": "bits-finance",
  "os": "Linux",
  "resourcegroup": "cruse-000000000000_southcentralus",
  "runtime_version": "python|3.7",
  "runtime_version_detected": "-",
  "sku": "BASIC",
  "src_path": "C:\\Users\\cruse\\OneDrive\\Desktop\\MyWork-master\\Finance"
}
```

We can see status of app as **running** on Azure Portal after successful deployment.



portal.azure.com/#blade/HubsExtension/BrowseResource/resourceType/Microsoft.Web%2FSites

Microsoft Azure Search resources, services, and docs (G+)

Home > App Services

hyderabad.bits-pilani.ac.in (hyderabad.bits-pilani.ac.in)

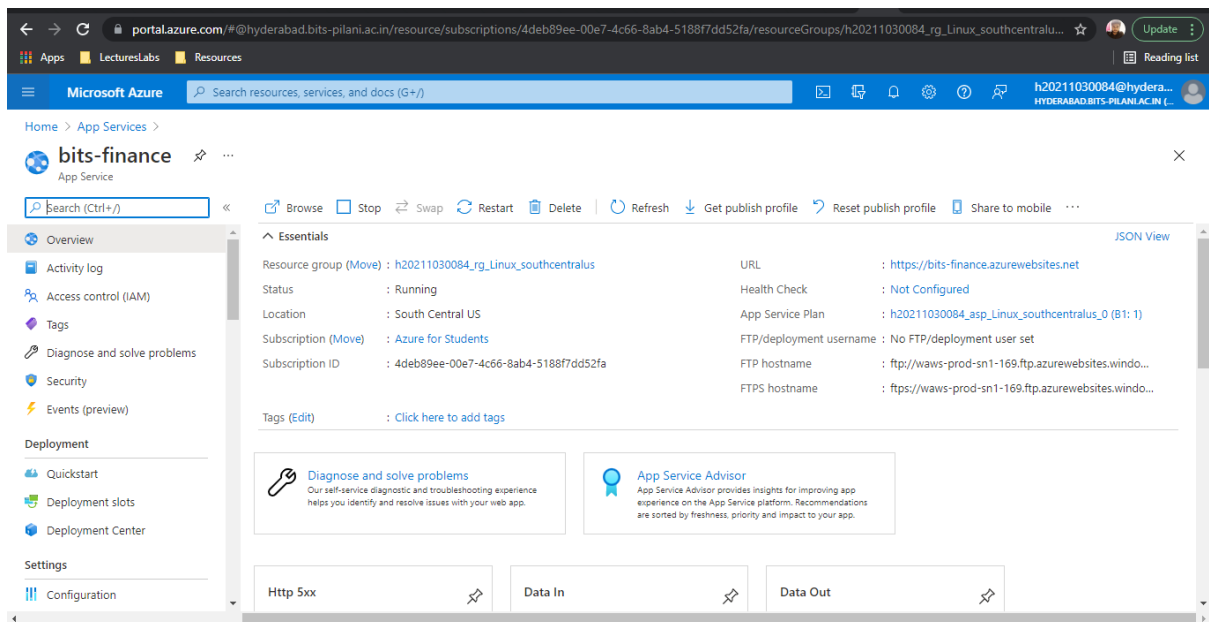
+ Create Manage view Refresh Export to CSV Open query Assign tags Start Restart Stop Delete Feedback

Filter for any field... Subscription == all Resource group == all Location == all Add filter

Showing 1 to 1 of 1 records. No grouping List view

Name	Status	Location	Pricing Tier	App Service Plan	Subscription	App Type
bits-finance	Running	South Central US	Basic	h20211030084_asp_Linux_southcentralus_0	Azure for Students	Web App

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portal.azure.com/#@hyderabad.bits-pilani.ac.in/resource/subscriptions/4deb89ee-00e7-4c66-8ab4-5188f7dd52fa/resourceGroups/h20211030084_rg_Linux_southcentralus...

Microsoft Azure Search resources, services, and docs (G+)

Home > App Services > bits-finance

App Service

Search (Ctrl+/) Browse Stop Swap Restart Delete Refresh Get publish profile Reset publish profile Share to mobile

Overview

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Security
- Events (preview)

Deployment

- Quickstart
- Deployment slots
- Deployment Center

Settings

- Configuration

Essentials

Resource group (Move): h20211030084_rg_Linux_southcentralus

Status: Running

Location: South Central US

Subscription (Move): Azure for Students

Subscription ID: 4deb89ee-00e7-4c66-8ab4-5188f7dd52fa

Tags (Edit): Click here to add tags

URL: https://bits-finance.azurewebsites.net

Health Check: Not Configured

App Service Plan: h20211030084_asp_Linux_southcentralus_0 (B1: 1)

FTP/deployment username: No FTP/deployment user set

FTP hostname: ftp://waws-prod-sn1-169.ftp.azurewebsites.windows.net

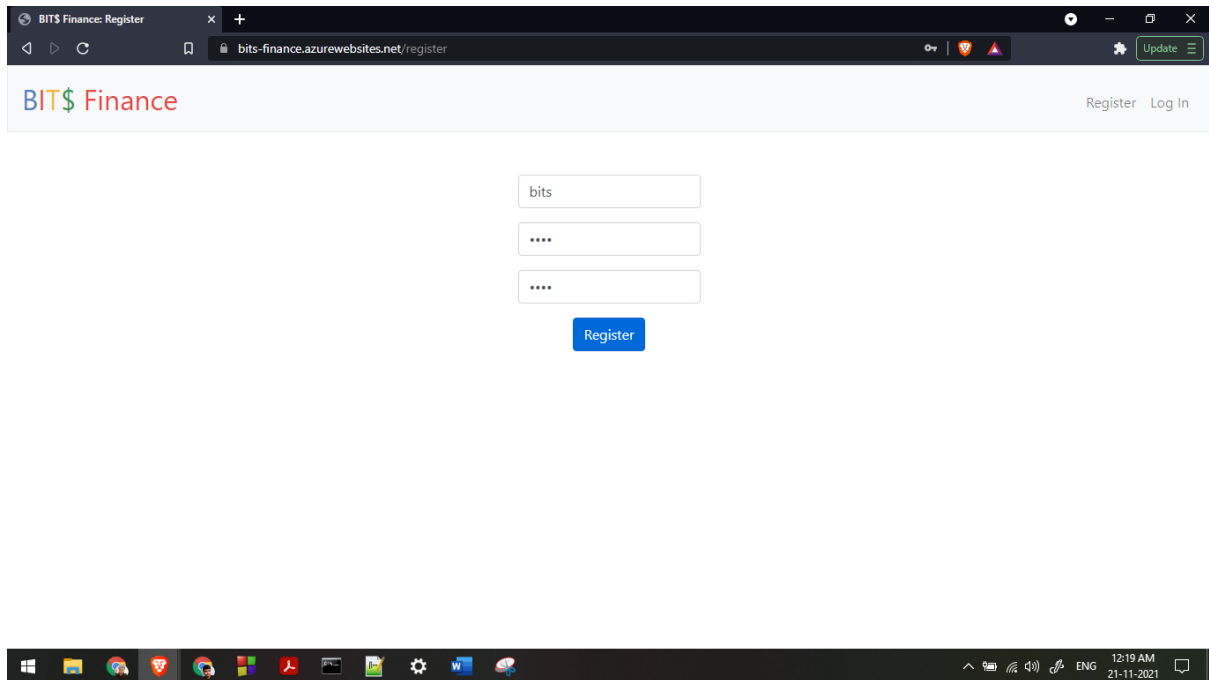
FTPS hostname: ftps://waws-prod-sn1-169.ftp.azurewebsites.windows.net

Diagnose and solve problems

App Service Advisor

Http 5xx Data In Data Out

To Register



A screenshot of a web browser showing the registration page for BIT\$ Finance. The browser's address bar displays 'bits-finance.azurewebsites.net/register'. The page features the BIT\$ Finance logo in the top left and 'Register' and 'Log In' links in the top right. The registration form consists of three input fields: the first is labeled 'bits', the second and third are masked with four dots. A blue 'Register' button is positioned below the third field. The Windows taskbar at the bottom shows the time as 12:19 AM on 21-11-2021.

BIT\$ Finance Register Log In

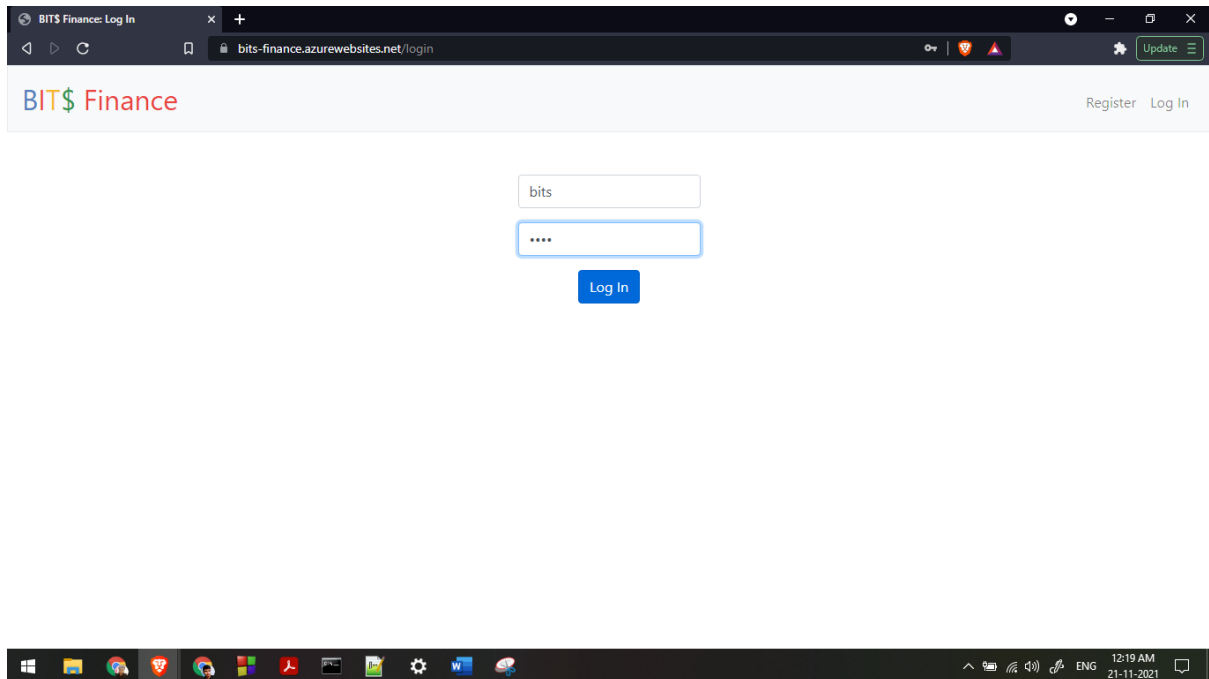
bits

....

....

Register

To Login



A screenshot of a web browser showing the login page for BIT\$ Finance. The browser's address bar displays 'bits-finance.azurewebsites.net/login'. The page features the BIT\$ Finance logo in the top left and 'Register' and 'Log In' links in the top right. The login form consists of two input fields: the first is labeled 'bits', and the second is masked with four dots. A blue 'Log In' button is positioned below the second field. The Windows taskbar at the bottom shows the time as 12:19 AM on 21-11-2021.

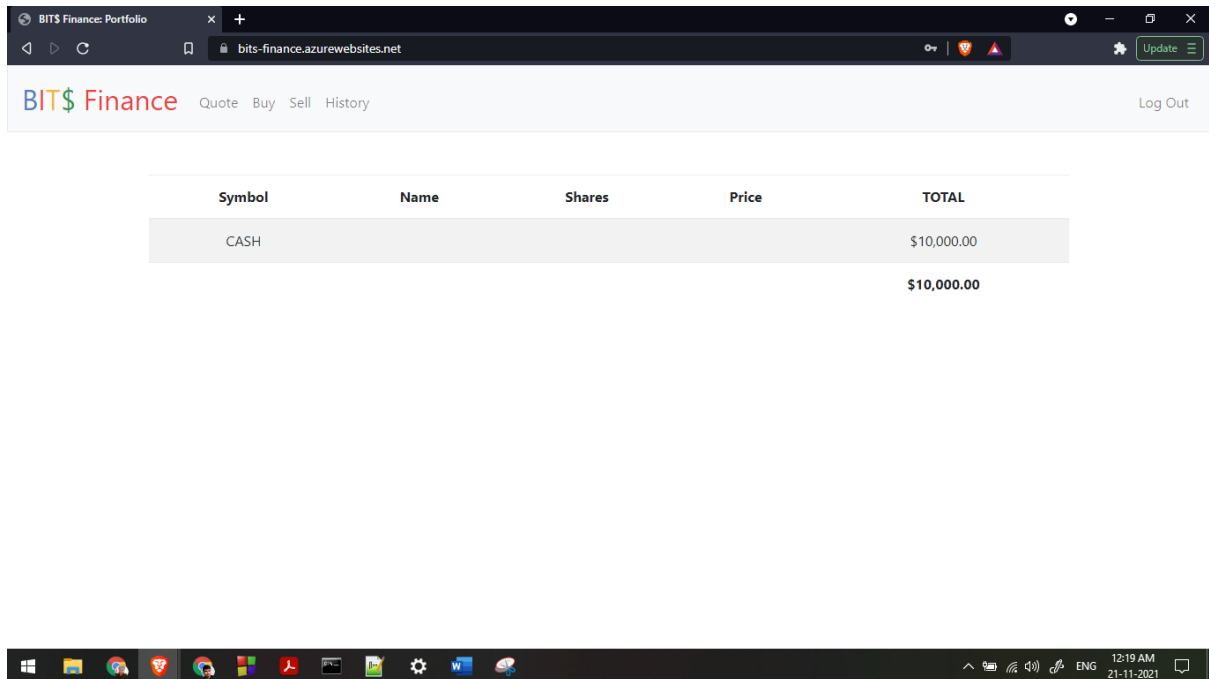
BIT\$ Finance Register Log In

bits

....

Log In

Once Registered (Portfolio Page)

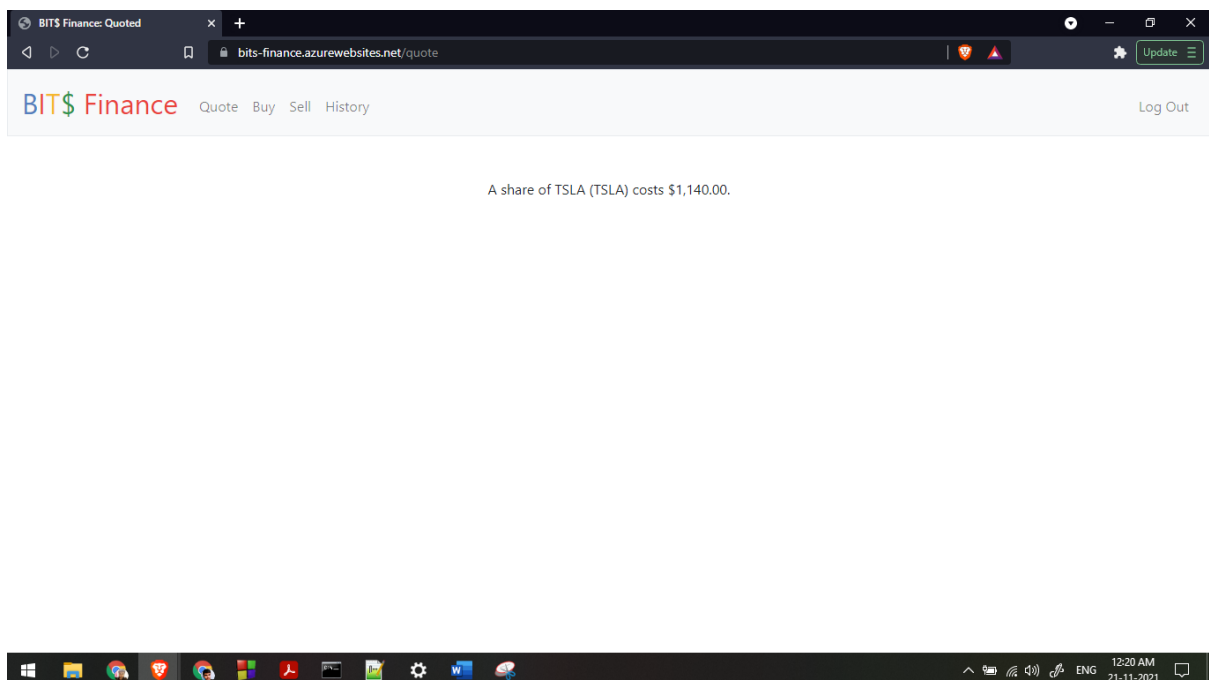


The screenshot shows a web browser window with the address bar displaying "bits-finance.azurewebsites.net". The page header includes the "BIT\$ Finance" logo and navigation links for "Quote", "Buy", "Sell", and "History". A "Log Out" link is located in the top right corner. The main content area features a table with the following data:

Symbol	Name	Shares	Price	TOTAL
CASH				\$10,000.00
				\$10,000.00

The Windows taskbar at the bottom shows the time as 12:19 AM on 21-11-2021.

QUOTE (To Check the price (real) of share)



The screenshot shows a web browser window with the address bar displaying "bits-finance.azurewebsites.net/quote". The page header is identical to the Portfolio page, with the "BIT\$ Finance" logo and navigation links. The main content area displays the text: "A share of TSLA (TSLA) costs \$1,140.00." The Windows taskbar at the bottom shows the time as 12:20 AM on 21-11-2021.

Try to Quote MSFT, TSLA, AAPL, NFLX, TCS any other stock you know.

BUY

BIT\$ Finance Buy

bits-finance.azurewebsites.net/buy

BIT\$ Finance Quote Buy Sell History Log Out

AAPL

2

Buy

Try buying (MSFT, TSLA, AAPL, NFLX, TCS any other stock you know) and holding shares for 1-2 days before selling check if you are in loss or profit on portfolio page.

Portfolio (After Buying)

BIT\$ Finance Portfolio

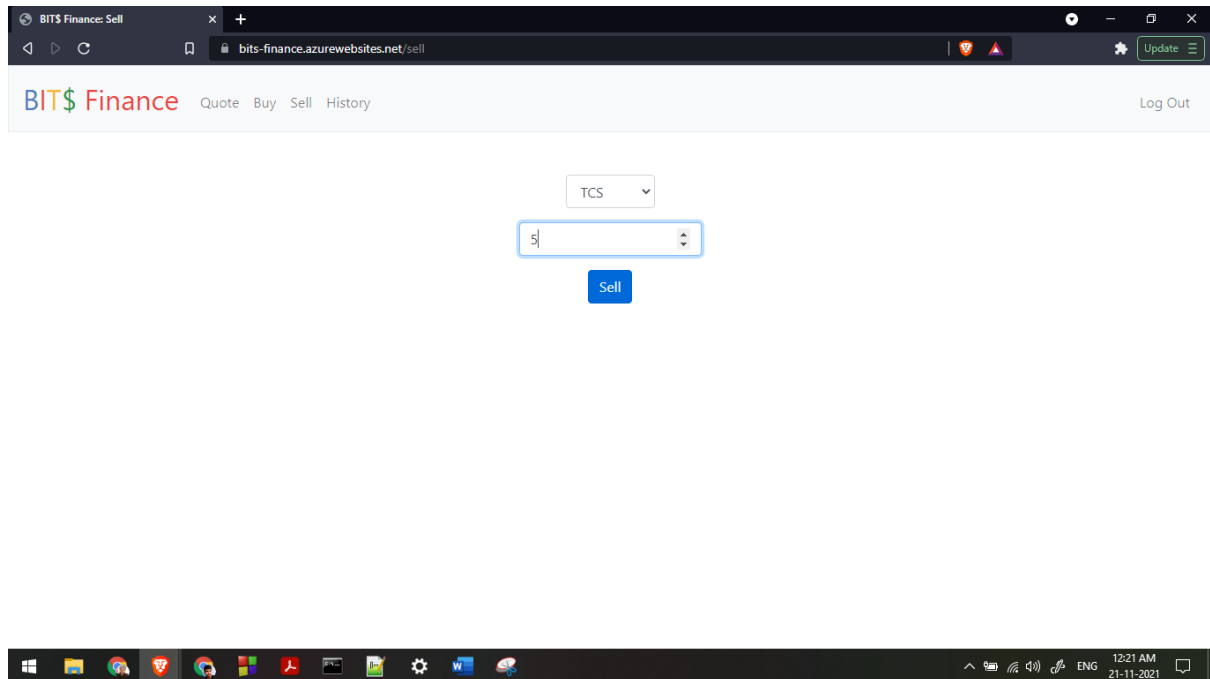
bits-finance.azurewebsites.net

BIT\$ Finance Quote Buy Sell History Log Out

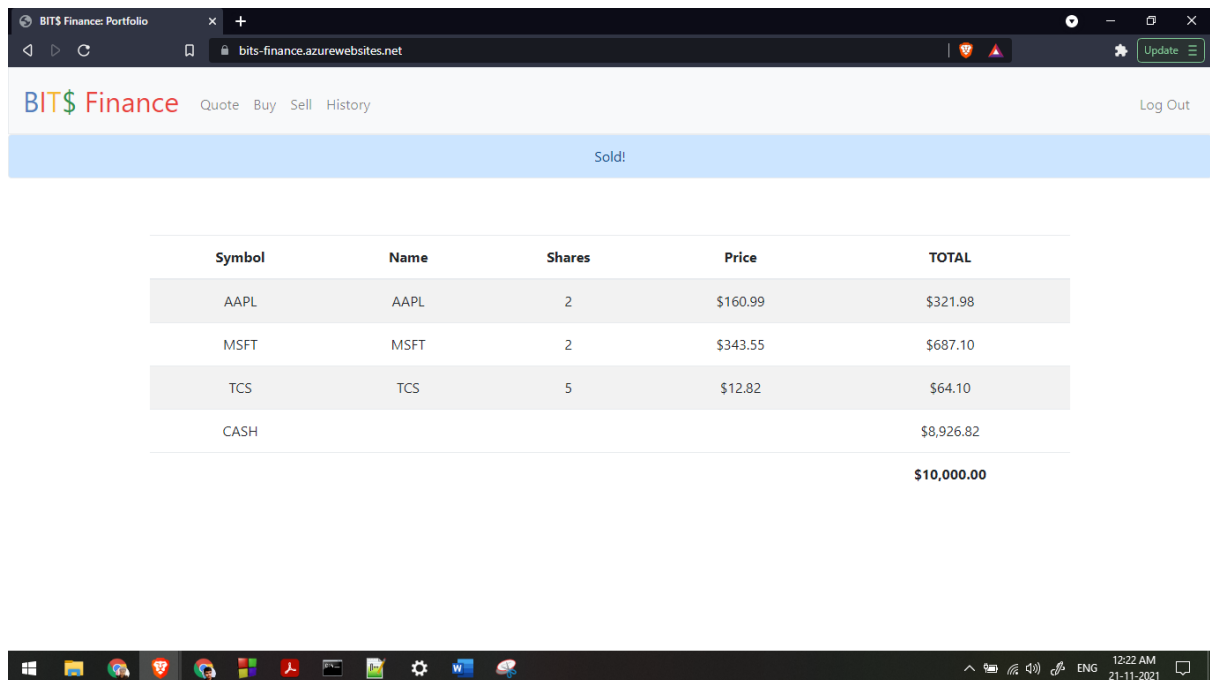
Bought!

Symbol	Name	Shares	Price	TOTAL
AAPL	AAPL	2	\$160.99	\$321.98
MSFT	MSFT	2	\$343.55	\$687.10
TCS	TCS	10	\$12.82	\$128.20
CASH				\$8,862.72
				\$10,000.00

SELL

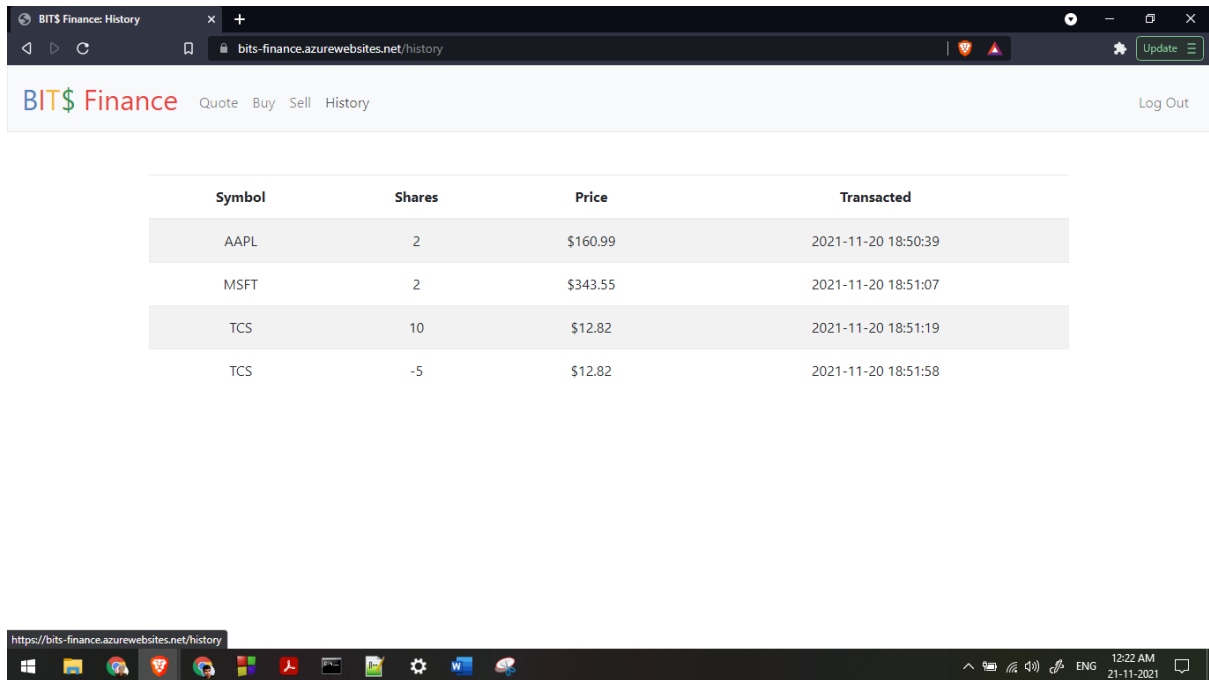


Portfolio (After Selling)



HISTORY

Shows the transactions done by user.



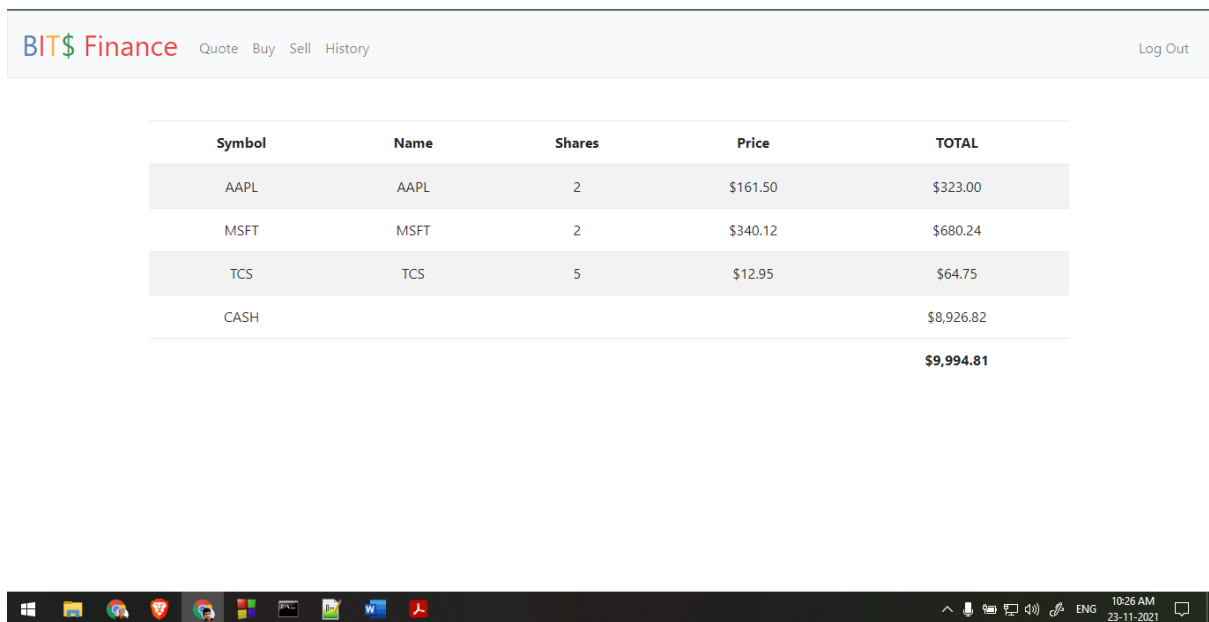
The screenshot shows a web browser window with the address bar displaying "bits-finance.azurewebsites.net/history". The page header includes the "BIT\$ Finance" logo and navigation links: "Quote", "Buy", "Sell", "History", and a "Log Out" button. The main content area displays a table of transactions.

Symbol	Shares	Price	Transacted
AAPL	2	\$160.99	2021-11-20 18:50:39
MSFT	2	\$343.55	2021-11-20 18:51:07
TCS	10	\$12.82	2021-11-20 18:51:19
TCS	-5	\$12.82	2021-11-20 18:51:58

The Windows taskbar at the bottom shows the system clock as 12:22 AM on 21-11-2021.

After 2 Days

We can see that prices of shares that are bought before 2 days have changed and we can see that overall portfolio value decreased by around \$5.2.



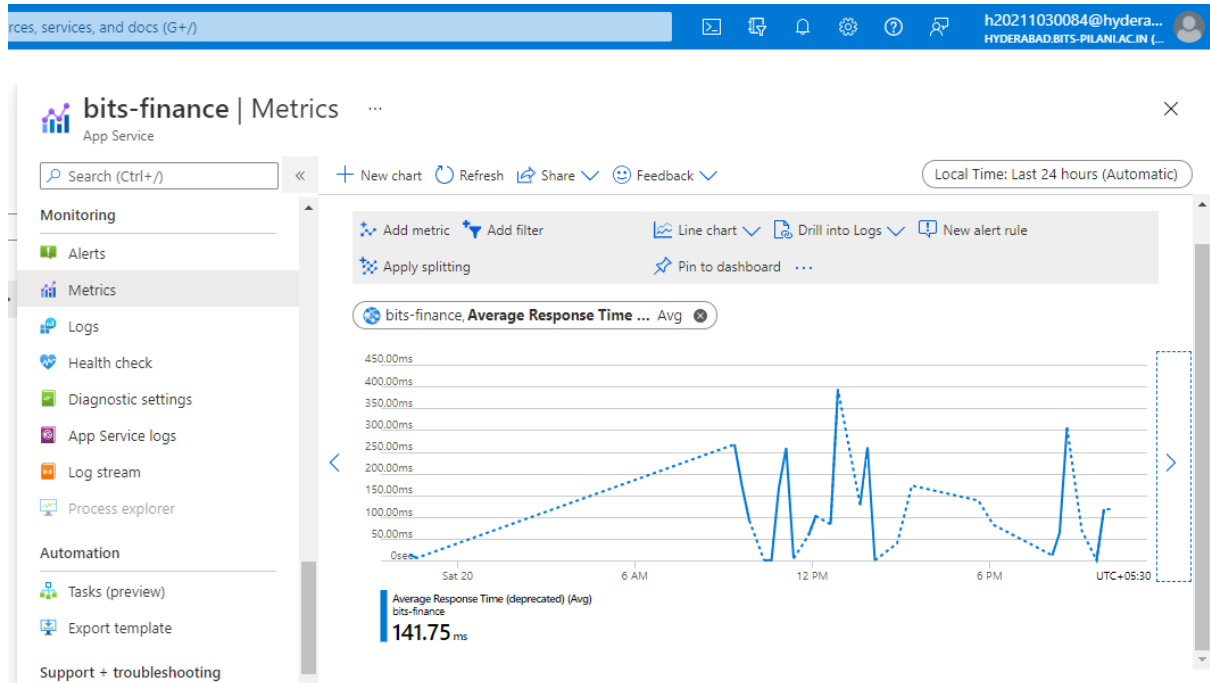
The screenshot shows the same "BIT\$ Finance" web application. The navigation bar is identical. The main content area displays a table summarizing the current portfolio value.

Symbol	Name	Shares	Price	TOTAL
AAPL	AAPL	2	\$161.50	\$323.00
MSFT	MSFT	2	\$340.12	\$680.24
TCS	TCS	5	\$12.95	\$64.75
CASH				\$8,926.82
				\$9,994.81

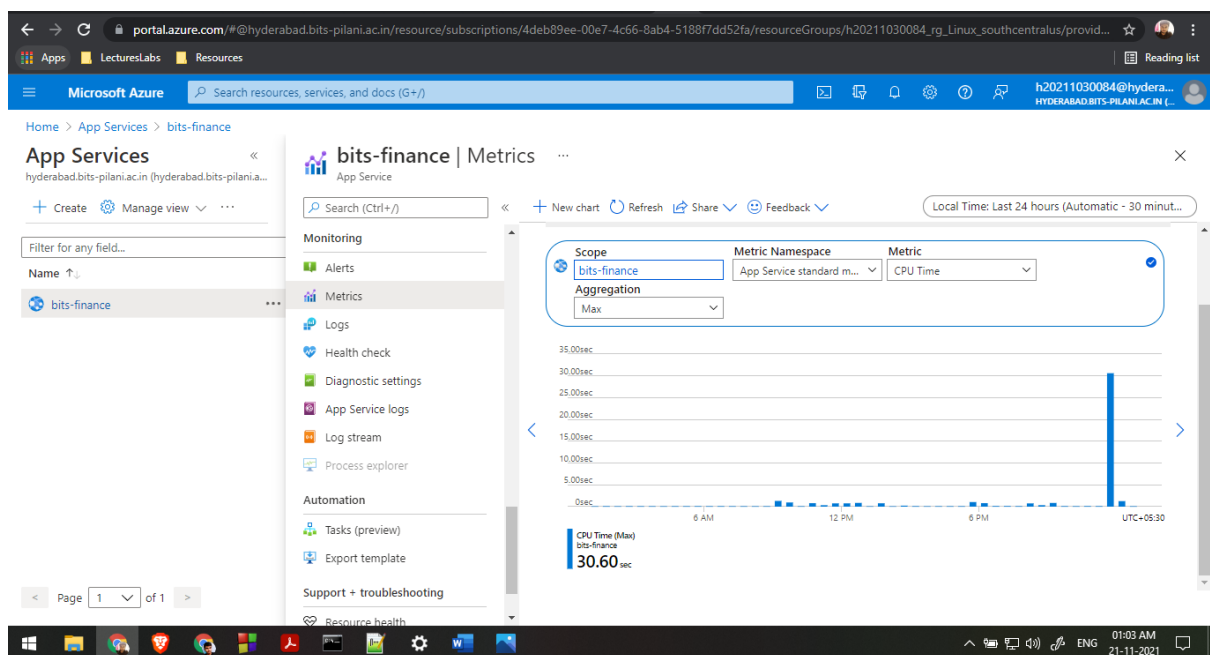
The Windows taskbar at the bottom shows the system clock as 10:26 AM on 23-11-2021.

Performance Measures

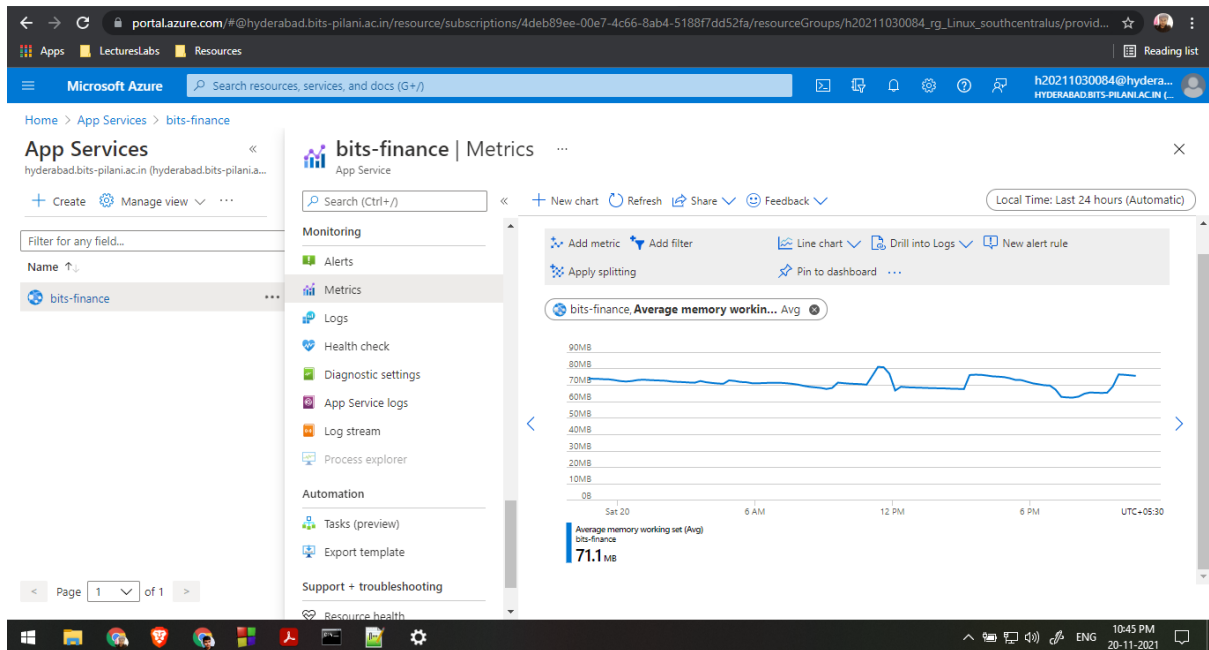
Average Response Time



CPU Time (max)

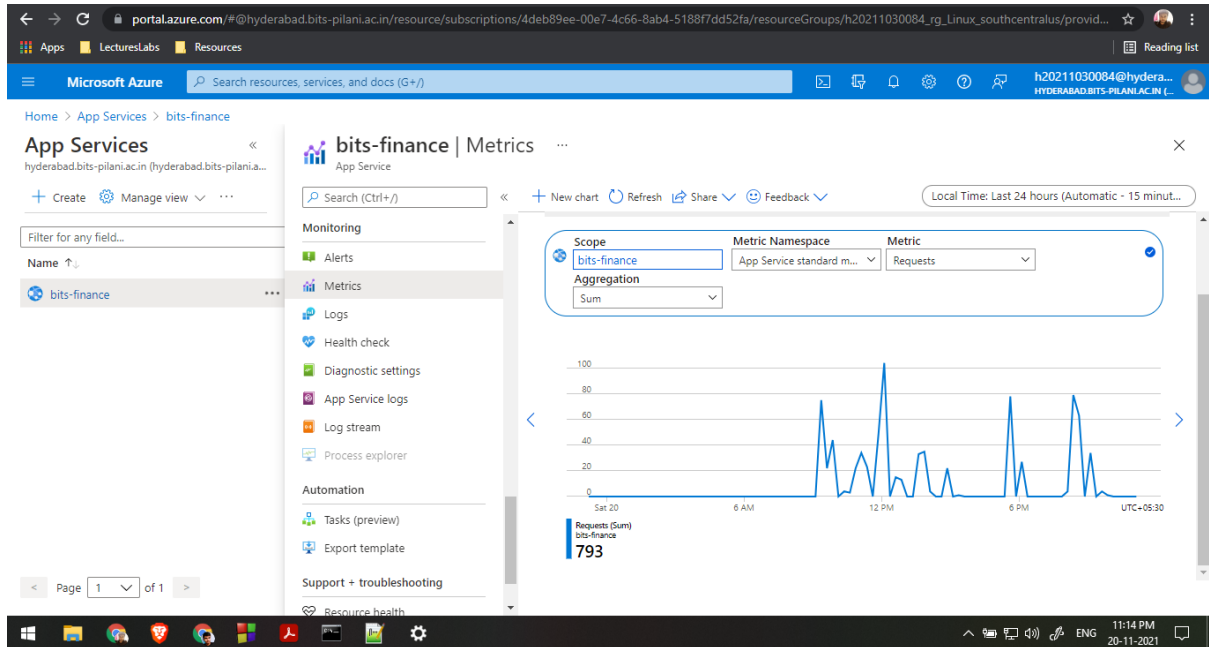


Average Memory Working Set

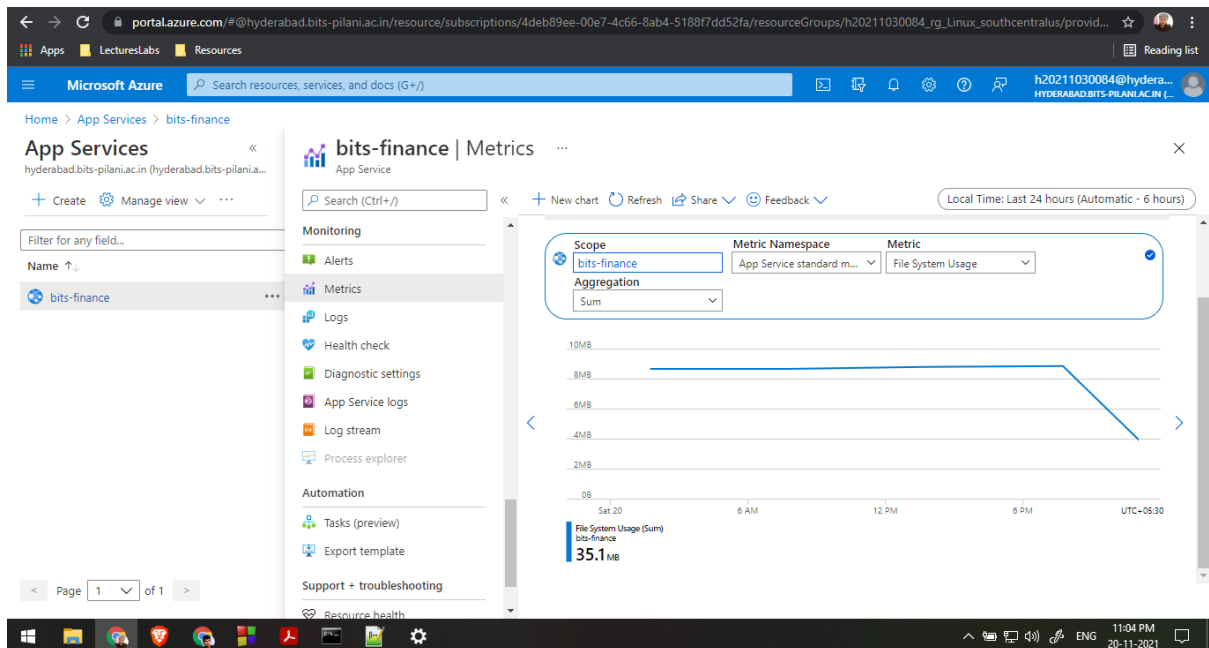


USAGE STATISTICS

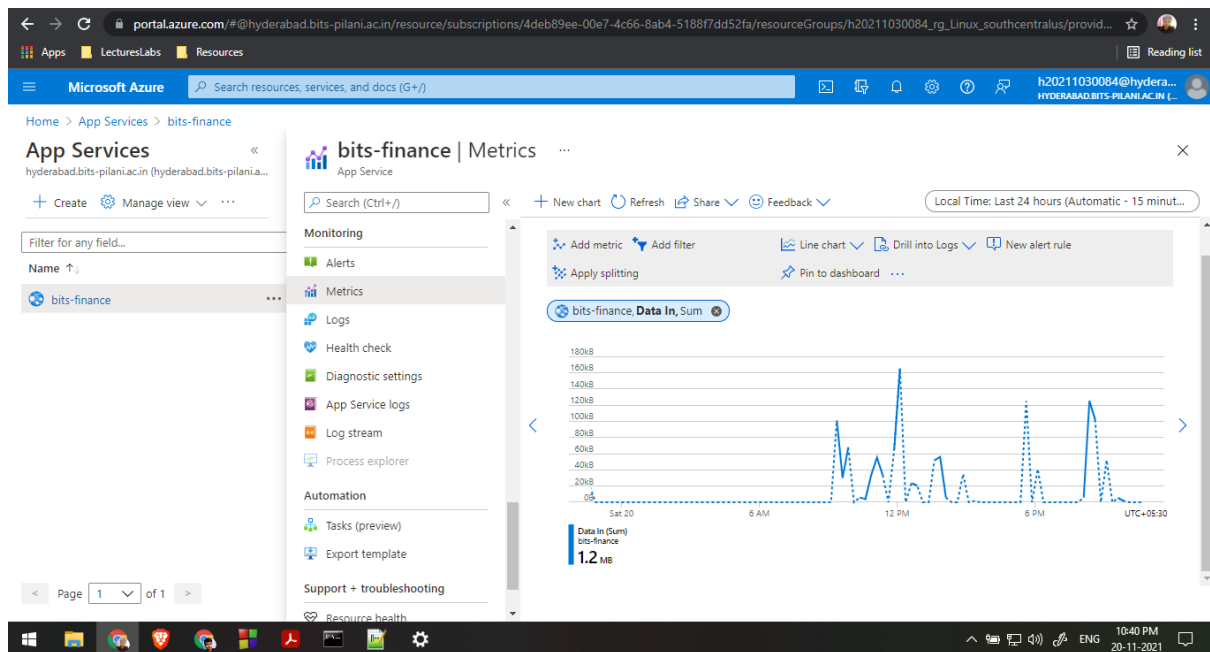
Total Requests (Single Day)



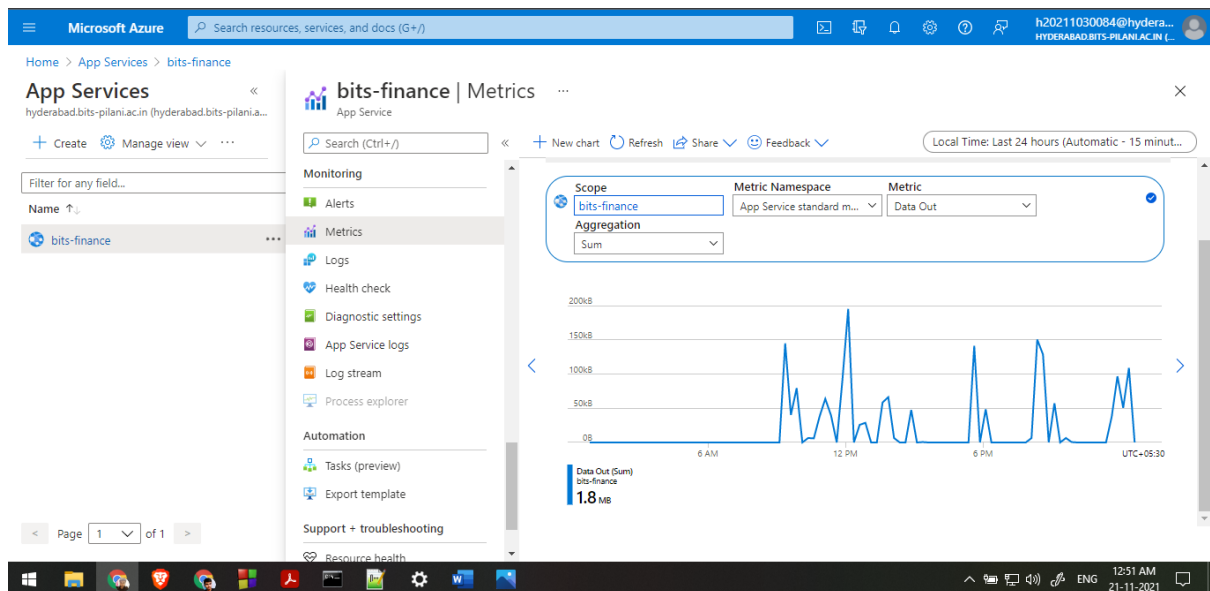
File System Usage



Data IN



Data Out



CHALLENGES AND RESOLUTIONS

1. Defining Requirements for BIT\$ Finance

As this application contains different functionalities it was important to define all the requirements beforehand and plan the development accordingly. Defining all the functionalities to be developed beforehand and following the plan to develop all these functionalities was challenging for me. As the application involves designing functionalities of registration, login, portfolio of users, quote page for price checking, functionalities of buying and selling stocks, checking transaction history it was difficult to clearly define all the functionalities and plan its development well.

To overcome this challenge, I properly followed all the **Software Development Lifecycle** paradigms defined for the development of any software and application.

2. Choosing Technology Stack

This is another challenge that I faced before starting the implementation, it's about choosing the programming language and framework suitable for the application being developed. After exploring about different frameworks and based on my familiarity with the framework I have finally decided to develop application using **Python and Flask** (MVC framework).

3. Choosing the Database

According to requirements defined initially application requires to store data of users in the database. So, choosing the right database is another challenge I had to overcome. After exploring different databases and their suitability I have chosen the **SQLite Relational Database** for this application.

4. Testing of BIT\$ Finance

After developing the application to ensure that the application is working as intended or as per the requirements is challenging task. I needed to test all the functionalities of BIT\$ Finance to make sure that they are working as per the requirements defined initially. To complete the functional testing, I used **Selenium IDE** which provides different tools (like playback) and libraries for supporting web browser automation. It helped me for recording the test cases and playback of those test cases for testing the application.

5. Deploying On Cloud

Choosing between available cloud platforms is one of the challenges I have overcome during the entire project. As all the cloud providers provide everything to deploy the application just the method to follow is different. As I was more familiar with Microsoft Azure, I have chosen azure for the deploying the application and followed the documentation provided by azure for the same.

<https://docs.microsoft.com/en-us/azure/app-service/quickstart-python?tabs=bash&pivots=python-framework-flask>