Tribhuvan University

Institute of Science and Technology

A Final Year Internship Report

On "Python Developer"

At

Creators Institute of Business and Technology

Under the Supervision of

Mr. Sukraj Limbu

Submitted To:

Department of Computer Science and Information Technology

Texas International College

In partial fulfillment of the requirement for the bachelor's degree in

Computer Science and Information Technology

Submitted by:

Manish Gautam (TU Roll No.: 24704/076)

June, 2024

MENTORS' RECOMMENDATION

This is to certify that **Mr. Manish Gautam**, a student from **Texas International College** has completed the internship duration in Creators Institute of Business and Technology in the field of "Python Developer". I hereby recommend that this report has been prepared under my supervision by **Mr. Manish Gautam** in partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Information Technology of Tribhuvan University be processed for evaluation.

……

Mr. Dixanta Bahadur Shrestha

Mentor (Chairman of CIBT Group)

Kumaripati, Lalitpur

SUPERVISORS' RECOMMENDATION

I hereby recommend that this project report be prepared under my supervision by Mr. Manish Gautam (24704/076) Entitled "**Python Developer**" is satisfactory in the partial fulfillment of the requirement for the degree of Bachelor of Science in Computer Science and Information Technology (B.Sc. CSIT) is recommended for the final evaluation.

…….

Mr. Sukraj Limbu

Project Supervisor

Department of B.Sc. CSIT

LETTER OF APPROVAL

This is to certify that this internship report prepared by **Manish Gautam (24704/076)** entitled "**Python Developer**" in partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Information Technology has been well studied. In our opinion, it is satisfactory in scope and quality as an internship report for the required degree.

…….	…….
Mr. Omkar Basnet	**Sukraj Limbu**
Head Of Department	**Project Supervisor**
Texas International College	Department of B.Sc. CSIT
…….	…….
Internal Examiner	**External Examiner**
Texas International College	Tribhuvan University

ACKNOWLEDGEMENT

The successful completion of this internship report is the result of the cooperation, coordination, and collective efforts of various sources of knowledge. I consider myself truly fortunate to have had this opportunity during my internship, and I would like to express my sincere appreciation to all those who have contributed to this accomplishment.

First of all, I would like to thank Creators Institute of Business and Technology, for providing this opportunity to undertake an internship which was a great opportunity for learning and developing professionalism.

I would like to express my sincere gratitude to Mr. Dixanta Bahadur Shrestha, my internship mentor, for his guidance, encouragement, and knowledge throughout the completion of this project. Without his support and motivation, this work would have been much more challenging. This internship period has been instrumental in my transition from student life to a professional career. I am also deeply grateful to my supervisor, Mr. Sukraj Limbu, for his consistent guidance in ensuring that this report meets the highest standards and values.

Finally, I would like to express my gratitude to my colleagues and the entire CIBT team for their unwavering encouragement and support, which has served as a consistent source of motivation throughout the report preparation process. In conclusion, I am sincerely thankful to all those who have contributed to the completion of this internship report. Your assistance has been invaluable, and I am enthusiastic about carrying the knowledge and experiences acquired during this internship with me as I move forward.

Thank You.

Manish Gautam (24704/076)

ABSTRACT

The "Cashflow Management" app is a web-based platform designed to assist individuals and businesses in tracking, managing, and optimizing their cash flow. This application offers a range of tools and features to monitor income, expenses, and overall financial health, facilitating informed financial decision-making. The system employs advanced technologies, including Python with Django for backend development, MySQL for database management, and react for frontend development. Furthermore, the development process integrates GitHub for version control and Docker for containerization, ensuring a robust and efficient application. By leveraging these technologies, the platform provides users with real-time insights and tools to optimize their cash flow, making it an indispensable tool for effective financial management.

To support the app with relevant data, I utilized Beautiful Soup, urllib, and regex to scrape temporal data from various sources, including static tables and dynamic AJAX data. For data processing and analysis, I employed Pandas (Team., 2024) and scikit-learn. Additionally, I implemented TensorFlow to develop machine learning models for predicting financial trends and outcomes. These models enable users to make informed decisions by providing accurate forecasts based on historical and real-time data.

The system also involved developing APIs using Django, integrating the NRB forex API, and connecting them with the React.js frontend to ensure seamless data flow and an enhanced user experience. The integration of these advanced features into the "Cashflow Management" platform highlights its capability to offer a comprehensive and user-friendly solution for managing financial activities.

Keywords: Beautiful Soup, regex, AJAX, Pandas, TensorFlow, API

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LIST OF ABBREVIATIONS

TU	Tribhuvan University
CIBT	Creators Institute of Business and Technology
B.Sc.	Bachelor of Science
CSIT	Computer Science and Information Technology
CEO	Chief Executive Officer
COO	Chief Operating Officer
CTO	Chief Technology Officer
AI	Artificial Intelligence
ML	Machine Learning
API	Application Programming Interface
NRB	Nepal Rastra Bank
CSV	Comma-Separated Values
AJAX	Asynchronous JavaScript and XML
NLP	Natural Language Processing
KMC	Kathmandu Metropolitan City
NEPSE	Nepal Stock Exchange
IDE	Integrated Development Environment
Vs Code	Visual Studio Code
ROI	Return on Investment
Regex	Regular Expressions

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CHAPTER 1 : INTRODUCTION

1.1 Introduction

During my internship at Creators Institute of Business and Technology in Kumaripati, Lalitpur, spanning from March 20 to June 20, I, Manish Gautam, had the opportunity to immerse myself deeply in Python programming and related technologies. Working alongside with another Python intern and collaborating with peers specializing in React.js, I had the privilege of being mentored by Dixanta Bahadur Shrestha, a distinguished business expert with extensive experience in over 20 programming languages. Mr. Shrestha serves as the Chairman at CIBT and previously held the position of CEO at Leapfrog Academy.

Throughout this internship, my focus encompassed a wide range of responsibilities and projects. I extensively utilized regular expressions (regex) for tasks involving data parsing and validation, honing my skills in handling structured and unstructured data. Additionally, I gained hands-on experience in web scraping techniques, particularly for extracting dynamic Ajax-based content from various web sources. API integration was another key area of my internship, where I worked on implementing APIs to fetch and process requested data efficiently. Moreover, I actively participated in algorithm development, tackling specific challenges encountered during the internship projects. Notably, I am currently involved in ongoing Django projects named "Job Portal" and "Cashflow Management," aimed at developing robust web applications to manage financial and investment data effectively.

While my exposure to artificial intelligence (AI) (Russell, 2021), machine learning (ML), and keras was limited during this period, the internship provided me with invaluable practical experience in leveraging Python for real-world applications. This experience significantly enhanced my skills in web development, data manipulation, and problem-solving within a professional and dynamic educational environment at Creators Institute of Business and Technology. This internship has been instrumental in shaping my career trajectory and reinforcing my passion for software development and technology innovation.

1.2 Problem Statement

I choose to pursue a Python internship to build on the knowledge I gained in my seventh semester, especially in Python and Django. Developing a quiz application using Django sparked my interest in web development and solidified my ambition to pursue a career in this field. This internship provides an opportunity to gain practical experience in the job market and start my professional journey toward future opportunities. I find web development fascinating due to its potential for growth and innovation, making it an ideal career choice. Through this internship, I aim to deepen my understanding of website development and gain insights that will lay a strong foundation for a successful career in web development.

I chose to pursue my internship at Creators Institute of Business and Technology (CIBT) primarily because of the welcoming atmosphere and the excellent mentorship provided by seasoned professionals proficient in various programming languages, including Python. Their approachable nature and knowledge have helped me grasp Python features better and improve my programming skills.

Moreover, the supportive community and friendships formed with peers who share similar interests have fostered a collaborative learning environment.

1.3 Objectives

My internship objectives focus on following key areas:

- To build strong backend systems with Django for efficient web applications.
- To demonstrate knowledge & actively seek learning opportunities from seniors.
- To collaborate effectively, minimize errors, learn from mistakes, & meet deadlines.
- To acquire company-specific knowledge & skills while working professionally.

1.4 Scope and Limitation

During my internship at Creators Institute of Business and Technology (CIBT), the primary focus was on enhancing my backend development as well as learning python from scratch. The scope and limitations of my internship experience are as follows:

Scope:

- I have developed backend systems using Django for efficient web applications and enhanced Python skills, including data parsing, validation, and web scraping with Beautiful Soup, urllib, and regex.
- Processed and analyzed data using Pandas and scikit-learn, and developed machine learning models with TensorFlow for predictive analytics.
- Applied practical knowledge in system architecture, API integration, deployment methodologies, and middleware implementation.
- Collaborated effectively with peers and frontend developers, managing projects like "Job Portal" and "Cashflow Management."
- Utilized core Python functionalities.
- Learned from experienced professionals and gained industry insights.

Limitations:

- Three-month duration limited depth of project involvement and range of skills developed.
- I mainly focused on Django backend development meant missing opportunities to learn full-stack development and other programming languages.
- My learning depended on the availability and variety of ongoing Django projects.
- Limited resources such as mentorship, software licenses, and hardware.
- Adapting to organizational workflows and processes impacted the speed of learning.
- Skill gaps in areas such as APIs and deployment.
- Continuous learning was essential to keep up with industry changes.
- Mentorship was crucial for grasping advanced concepts and achieving professional growth.

1.5 Report Organization

From my perspective, the main organization of my internship report is structured as follows:

Chapter 1: Introduction

I introduce my internship experience at Creators Institute of Business and Technology, focusing on backend development using Python and Django. This chapter sets the context for discussing the objectives, scope, and limitations of my internship.

Chapter 2: Organization Details and Literature Review

This chapter provides an overview of Creators Institute of Business and Technology, including its mission, organizational structure, and working domains. I detail the department where I interned and review relevant literature that informed my internship focus.

Chapter 3: Internship Activities

I outline my roles and responsibilities throughout the internship, emphasizing weekly technical activities. Projects such as "Job Portal Web Application" and "Cashflow Management System " are highlighted, detailing the specific tasks and technical challenges encountered.

Chapter 4: Conclusion and Learning Outcomes

The final chapter summarizes my internship at Creators Institute of Business and Technology, reflecting on achievements and challenges. I assess the learning outcomes, emphasizing professional growth and readiness for future opportunities in web development.

CHAPTER 2 : ORGANIZATION DETAILS AND LITERATURE REVIEW

2.1 Introduction to organization

Creators Institute of Business and Technology (CIBT), located in Kumaripati, Lalitpur, Nepal, is where I have had the privilege of completing my internship. CIBT operates from a two-storey rented building. The first-floor houses essential facilities including reception, refreshment area, and working rooms. Upstairs, a spacious training area and additional workspaces facilitate comprehensive learning and collaborative endeavors. CIBT is dedicated to bridging theoretical knowledge with practical skills in business and technology education, providing a conducive environment for professional growth.

Creators Institute of Business and Technology (CIBT) is an educational institution where I have been privileged to intern. Under the leadership of Chairman Dixanta Bahadur Shrestha, the institute is committed to advancing education in business and technology. Alongside a dedicated receptionist who manages front desk operations, there is a supervisor responsible for overseeing daily activities in the chairman's absence. The institute currently hosts interns specializing in Python and React, alongside ongoing training classes focusing on the MERN stack (MongoDB, Express.js, React, Node.js), highlighting its dedication to comprehensive software development education.

Table 2.1: Organization Details

Name of Organization	Creators Institute of Business and Technology
Type	Private Limited.
Location	Kumaripati, Lalitpur
Website	https://creators.institute/
Email	cibtstaff@gmail.com

2.2 Organization Hierarchy

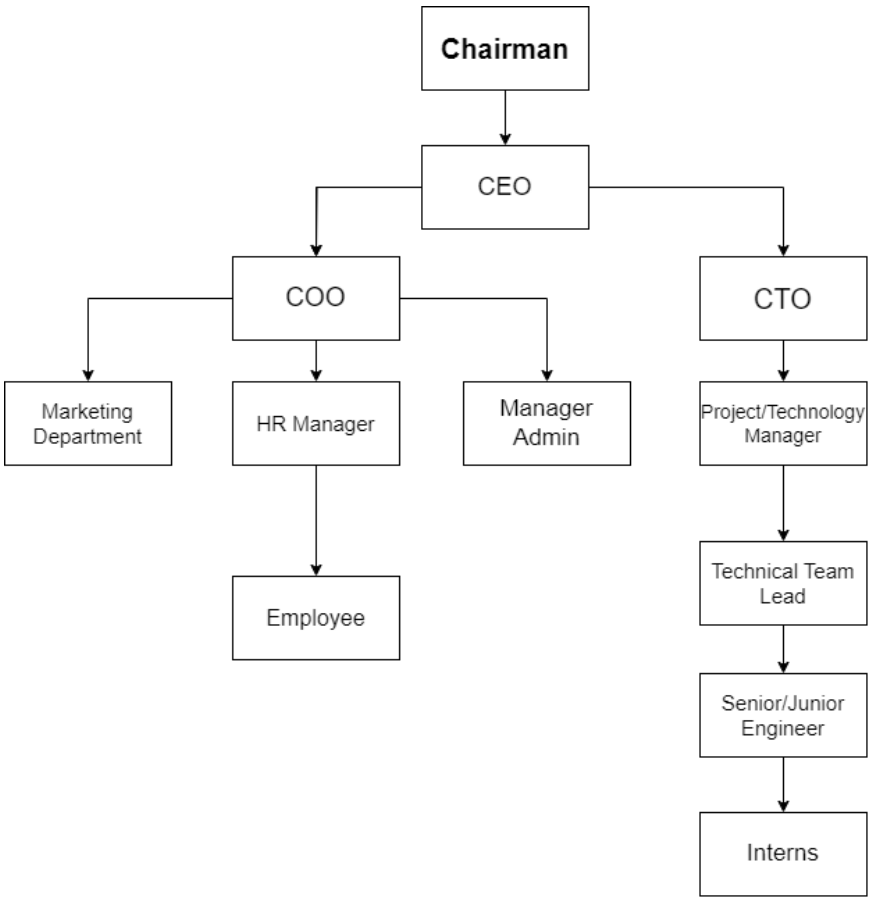

Figure 2.1 Organization Hierarchy

Chairman:

The Chairman is the highest-ranking officer in the company, overseeing the board of directors and ensuring its effectiveness in setting and implementing the company's strategic direction. His name is Dixanta Bahadur Shrestha.

CEO (Chief Executive Officer):

The CEO is responsible for the overall management and operation of the company. The CEO ensures that the company meets its financial and strategic objectives. He is responsible for making major corporate decisions, driving the direction the company takes, supervising other executives, and overseeing growth plans

COO (Chief Operating Officer):

The COO oversees the day-to-day administrative and operational functions of the company, ensuring that all departments work efficiently and effectively. Reporting to the CEO, the COO is responsible for implementing business strategies, overseeing specific departments like HR and Marketing, and ensuring that operational processes align with the company's goals and objectives.

CTO (Chief Technology Officer):

The CTO is responsible for the technological direction of the company. This role involves overseeing the development and implementation of new technologies, managing the IT department, and ensuring that the technological resources support the company's business needs. The CTO aligns technology strategies with the company's overall objectives and drives innovation.

Managers:

Managers are responsible for overseeing specific departments, teams, or projects within the company. They coordinate the efforts of their team members, set goals, allocate resources, and ensure that tasks are completed efficiently and effectively.

2.3 Working Domain of Organization

Creators Institute of Business and Technology (CIBT) is a distinguished technological institution specializing in comprehensive training and internship programs in the field of technology. CIBT offers a wide array of programs and services aimed at equipping students and professionals with essential skills in web development and full-stack development.

CIBT's core domains include:

- Web Development
- Full-Stack Development
- Internship Programs
- Skill Enhancement Programs
- Custom Application Services

2.4 Description of Intern Department/Unit

2.4.1 Internship Selection Process

The selection process for joining the organization is systematic. Prospective interns start by choosing their specialization, such as web development, full-stack development, frontend, backend development. After submitting their applications, candidates undergo a rigorous interview process conducted by the manager and chairman, consisting of a personal interview exploring their background and interests, followed by a technical interview focusing on specific competencies required for the role. Selected candidates then participate in an orientation program to connect with peers and the organization, learn about company policies and procedures, and engage in a collaborative group project to foster teamwork.

2.4.2 Internship unit

The internship unit at CIBT integrates interns into specialized departments, allowing them to apply their skills and knowledge to real-world projects while receiving guidance and mentorship from experienced professionals. There were two intern groups: Frontend ReactJS Interns, consisting of 9 interns, and Backend Django Interns, consisting of 2 interns. I was a Python Django intern working under my mentor, Dixanta Bahadur Shrestha.

2.4.3 Duration

Internships at Creators Institute of Business and Technology typically last for a period of three months, providing interns with ample time to gain valuable experience and contribute to ongoing projects.

Table 2.2 Internship Duration

Company Name:	Creators Institute of Business and Technology
Office Location:	Kumaripati, Lalitpur
Start Date:	20st March 2024
End Date:	20th June 2024

Total Duration	3 Months
Office Hour	12:00 PM to 4:00 PM
Working Days:	Sunday to Friday
Weekly Hours:	28 hours

2.5 Literature Review

This section reviews key literature and studies that have influenced my internship experience, focusing on Python programming, Django web framework, algorithms, web scraping techniques, machine learning (Alpaydın, 2020), and natural language processing (NLP). The aim is to provide a theoretical backdrop to my practical work during the internship.

QuickBooks:

QuickBooks (Team I. , 2024) is a cloud-based accounting software widely used by small and medium-sized businesses. It offers features like invoicing, expense tracking, payroll management, and tax preparation. Key technical aspects include its cloud platform for real-time data access, bank feeds integration for automated transaction handling, customizable reporting, multi-currency support, and integration with third-party apps. Its literature reviews highlight its impact on business operations, user satisfaction, financial management efficiency, and comparisons with other accounting solutions, providing insights into its technical capabilities and user benefits.

IMS POS Management System:

IMS Software Pvt. Ltd. (Team I. , 2024) offers robust Point of Sale (POS) solutions that play a crucial role in enhancing cash flow management for businesses. Their POS systems integrate comprehensive features like real-time sales tracking, inventory management, and automated reporting, all of which contribute to efficient financial oversight. By providing tools to monitor cash inflows and outflows, IMS POS helps businesses minimize financial risks, prevent overspending, and optimize budgeting processes. This capability makes IMS

POS a valuable asset for businesses looking to improve cash flow management and overall financial health.

Proficiency in Python Programming and Django Web Framework

I have developed strong proficiency in Python programming, utilizing its versatile libraries for various applications, including web development and data analysis. Python's readability and comprehensive ecosystem have enabled me to create efficient and scalable solutions.

Django Framework: I have extensively worked with Django, building robust, database-driven web applications. Notably, I developed a Cashflow Management application and utilized the Django REST framework, significantly enhancing my skills in backend development and API integration. My experience includes tasks such as user authentication, database operations, and API development.

Algorithms and Data Structures

My study of algorithms and data structures has equipped me with essential problem-solving skills. I understand the critical importance of algorithm efficiency and its impact on application performance, allowing me to write optimized and effective code. These concepts have been applied in developing algorithms for data processing and implementing backend services for web applications.

Expertise in Web Scraping Techniques

I have mastered web scraping techniques using tools like Beautiful Soup, regex, and urllib requests. These skills have been instrumental in extracting and analyzing data from websites for various projects.

Knowledge in Natural Language Processing (NLP) and Machine Learning (ML)

I have explored the field of natural language processing, focusing on tasks such as tokenization, sentiment analysis, and text processing. This knowledge has broadened my understanding of how AI can interpret and process human language.

Machine Learning: My internship introduced me to the fundamentals of machine learning. I have implemented ML algorithms and applied techniques in predictive modeling and data classification. For instance, I developed and trained text classification models using TensorFlow, preprocessing text data and transforming labels for classification tasks.

CHAPTER 3 : INTERNSHIP ACTIVITIES

3.1 Roles and Responsibility

As a python intern at CIBT, my primary responsibilities included:

- To scrap data from various websites and make available to the team.
- Conduct research in AI, ML, Python, and NLP, documenting findings and best practices.
- Develop and test algorithms, models, and scripts using Python, TensorFlow, and Keras.
- Complete tasks on time and submit to the mentor.
- Perform peer code reviews, provide feedback, and ensure code quality.

3.2 Weekly Log

Table 3.1 Weekly Log Details

Week	Tasks
Week 1:	• Set up development environment for backend projects. • Installed necessary tools such as Python, IDE (Vs Code), Django framework, and libraries. • Completed tutorials on Python basics and data manipulation. • Attended orientation sessions and familiarized myself with team members and project goals. • Completed a simple Django project.
Week 2:	• Learned about Web scraping, read/write files. • Work on a task to scrap data from Jobs Nepal website to gain some useful sights. • Implemented User-Agent header for HTTP requests to prevent website blocking. • Scrapped data using Beautiful Soup, later for more efficient extraction used regex and urllib to extract multiple pages data.

	• Data is extracted and submitted in CSV format to my mentor.
Week 3:	• Learned about Faker, file read/write/split. • Scrapped country data's, forex data, currencies data, merged with faker data. • Further perform demographic analysis, contact management, skill assessment, and financial operations.
Week 4:	• Scrapped historical/current gold and silver prices, Nepal location data, bank interest rates, and NEPSE data for investment analysis. • Analyzed and predicted potential returns on investments using the collected data. • Used regression model to forecast future earnings based on trends in gold, silver, bank interest rates.
Week 5:	• Implemented chatbot functionalities using SpaCy and Levenshtein distance. • Matched user input with stored relations and generated responses based on matching criteria. • Managed query counts and provided appropriate responses based on user interactions.
Week 6:	• Analysis Week • Identify stakeholders, evaluate impact on traffic, community, and regulatory compliance, and present findings and strategic recommendations based on analysis. • To extract data from ongoing activities, analysis of KMC Skill Fair 2024, demolition of Gaushala houses, and its investment opportunities. • Created a Program that map x employees to y tech companies' where only z vacancies are available based on skills and time-availability preferences. • Critical thinking of such activities to implement AI for reinforcement learning.

Week 7:	• Learning about algorithms like KNN, Regression, etc. • Understanding how to create and manipulate matrices and random number generation. • Develop a pathfinding algorithm to navigate from a starting number to a destination number within the matrix, using adjacency checks and heuristic methods.
Week 8:	• Mastering web scraping techniques for both static tables and dynamic AJAX data. • Listing all banks and importing yearly turnover data, interest rates, commodities prices (gold, silver, copper, brass, oil, wheat, rice), Forex rates, and share prices for the past 5 years. • Scraping temporal data from various websites using regular expressions.
Week 9:	• Learned and implemented regex to extract patterns and keywords from text, mapping them to operations. • Performed arithmetic operations based on extracted keywords and numbers. • Preprocessed text data, built, and trained a text classification model using TensorFlow. • Created a function to predict labels for new user inputs. • Loaded and manipulated data using Pandas (Team., 2024), transforming labels for classification.
Week 10:	• Assigned a task to supply forex API in cashflow management app. • Analyzed NRB forex API documentation, parameters, request, responses to develop api.py and successfully tested and verified the working of the API. • Coordinated with colleagues of Frontend to integrate the API. • Supply various data like bank interest, share bazar, commodities etc. previously scrapped to frontend interns for cashflow webapp development.

Week 11:	• Tasked with developing a Django backend, creating an API, and subsequently integrating it with React.js for the NG Investment project. • Develop a Django backend, integrated with forex API, bank interest/loan rates, creating business houses, analyzing business houses income, expenses, ROI, etc.
Week 12:	• Developing a Django web application to predict the future. • By integrating with forex API, and fetching past data then predicting the upcoming currency rates in coming days. • Introduced the new project ideas, to build a web application to currency exchange organization which will predict their losses or profit in the future as well as how much threshold to set to overcome losses.

3.3 Description of the Project(s) involved

Job Portal Web Application:

At the beginning of my internship, I was assigned the task of developing a basic Django project to demonstrate my proficiency in the field. As the team leader, I directed the development of a web application named "Job Portal." My contributions to the project included the implementation of several essential functionalities:

- User Authentication: Developed features for user login, logout, and registration.
- Job Management: Enabled the creation, deletion, and viewing of job postings.
- Notifications: Established a system for user notifications.
- User Profile Management: Facilitated the management of user profiles.
- Job Applications: Implemented the functionality for users to apply for jobs.
- Saved Jobs: Provided the capability for users to save job listings.
- Job Search: Developed a search feature for job listings.

To ensure proper access control, specific views were protected using decorators, restricting access to authenticated users and superusers only. Error handling and user feedback were

managed through Django's messages framework, ensuring a smooth user experience by providing immediate feedback on actions such as login errors, password mismatches, and successful operations.

This project was successfully completed within the initial few weeks of my internship. I utilized Django templates to visualize and verify the application's functionality before submitting it to my mentor. The project was subsequently integrated with a React.js framework.

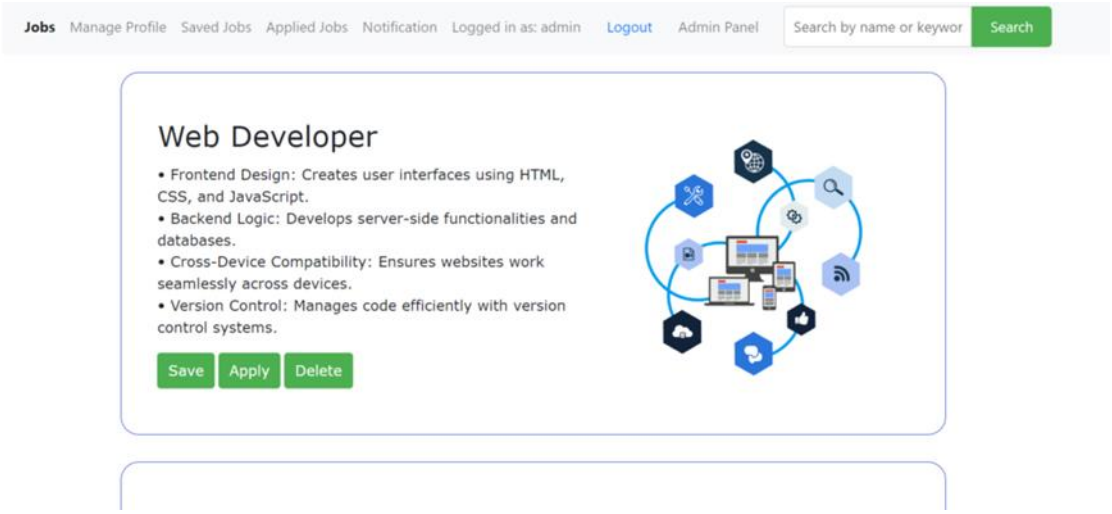

Figure 3.1 Initial UI Design for a Job Portal

Cashflow Management:

During my internship at Creators Institute of Business and Technology, I significantly contributed to the development and enhancement of the Cashflow Management app, a web-based platform built using React for the frontend and Django for the backend. This app is designed to help users effectively track, manage, and optimize their cash flow by providing real-time insights and essential financial tools.

Key functionalities of the Cashflow Management app include:

- Comprehensive Cash Flow Tracking: The app allows users to accurately monitor cash inflows such as revenue from sales, income from investments, loans, and other sources. It also facilitates tracking of cash outflows including operating expenses, loan repayments, taxes, and other financial obligations.

- Real-Time Data Integration: Leveraging APIs developed with Django, the app seamlessly integrates diverse datasets such as historical interest rates, NEPSE stock market data, foreign exchange rates from NRB forex API, and commodity prices (gold, silver, copper, etc.). This integration ensures that users have access to up-to-date financial information.
- Forecasting and Predictive Analytics: Using advanced statistical models implemented with libraries like NumPy, scikit-learn, and TensorFlow, the app offers predictive analytics capabilities. It forecasts future trends and potential returns on investments based on historical and real-time data, aiding users in making informed financial decisions.
- Visualization and Reporting: The frontend, powered by React.js, provides intuitive data visualization tools. Users can generate custom reports, graphs, and charts that depict cash flow trends, investment performance, and financial projections, enhancing clarity and decision-making.
- Customizable Financial Management Tools: Tailored to meet diverse business and individual financial needs, the app offers customizable features. Users can set financial goals, establish budgetary controls, and manage cash flow effectively through personalized settings and alerts.
- User-Friendly Interface: Designed with usability in mind, the app ensures a user-friendly experience. It simplifies complex financial data into actionable insights, empowering users with the tools they need to optimize their financial health and achieve their business objectives.

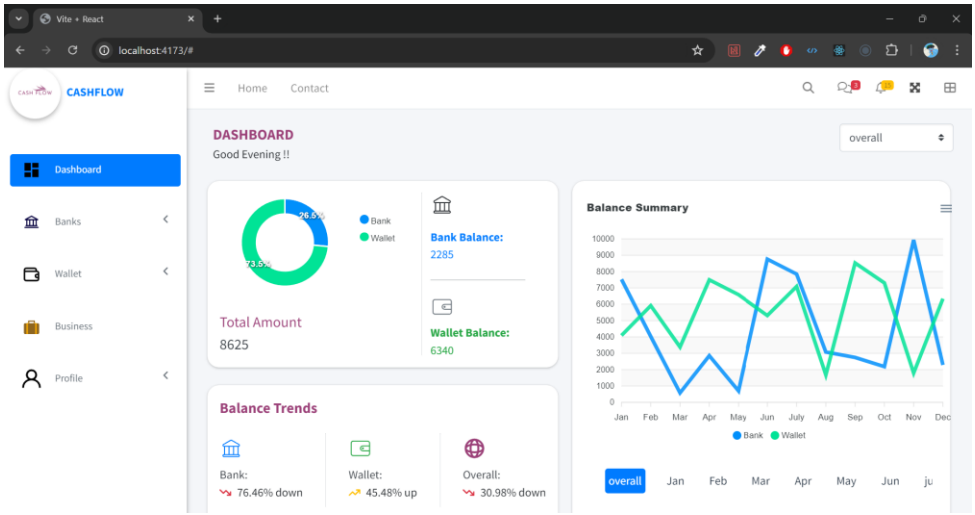

Figure 3.2 Initial UI Design of Cashflow Management System

3.4: Task/Activities Performed (Technical details)

Web Scraping:

During my internship, I performed extensive web scraping using Python libraries such as, regex, Beautiful Soup (Weideman, 2020) and urllib. I used Beautiful Soup to parse HTML content and extract data. To improve efficiency, I later utilized regular expressions (regex) for data extraction. I also implemented user-agent headers in HTTP requests to avoid being blocked by the websites.

Analysis:

I conducted in-depth analyses of various activities and programs. For the demolition activities at Gaushala Chowk, I evaluated the impacts on traffic, the community, and regulatory compliance, and identified potential investment opportunities in real estate and infrastructure. In learning reinforcement, I explored concepts that allow entities to make initial mistakes and then enforce strict adherence to rules. For the KMC Skill Fair 2024, I analyzed vocational training programs aimed at improving employment opportunities.

Regression for Prediction:

I applied regression analysis to predict potential earnings from investments. Using historical data on gold and silver prices, bank interest rates, and NEPSE data, I developed regression models to forecast future trends. This involved data cleaning and processing, building the model using libraries like NumPy and scikit-learn, and validating its accuracy.

NLP (Natural Language Processing):

I implemented NLP techniques to build a chatbot that matches user inputs with stored relations and generates appropriate responses. I used libraries such as SpaCy and TensorFlow (Team T. , 2024) for text tokenization, stop word removal, and text classification. The chatbot was capable of understanding user queries and providing relevant responses based on predefined patterns.

Classification, Clustering, and Prediction:

I applied various machine learning techniques, including classification, clustering, and prediction. Using libraries like scikit-learn and TensorFlow, I built and evaluated models

to analyze and interpret data. These techniques were used for tasks such as predicting user inputs and classifying text data.

Extensive Use of Regular Expressions:

Regular expressions (regex) were extensively used for web scraping and text processing tasks. For example, regex was used to extract specific patterns from HTML content and to identify numbers within text for arithmetic calculations.

Algorithm Development:

I developed an algorithm for a specific task, such as creating a pathfinding algorithm to navigate from a starting number to a destination number within a matrix. This involved implementing heuristic methods and adjacency checks.

Scraping Temporal Data:

I scraped temporal data from various sources, including NEPSE and Forex rates, spanning the past five years. This involved handling dynamic AJAX data and using APIs to fetch historical data. Libraries like requests, regex, and Beautiful Soup (Weideman, 2020) were instrumental in these tasks.

Collaboration with Frontend Developers:

I collaborated with frontend developers to supply all available data for integration into web applications. The data provided included bank interest rates, share prices, API, geographical data, and other financial data.

Git Version Control:

After completing each task and analyses, I pushed all the collected data, code, and results to a Git repository. This allowed other team members to access, review, and collaborate on the data and codebase. Using Git ensured version control, easy sharing, and collaborative development.

CHAPTER 4 : CONCLUSION AND LEARNING OUTCOMES

4.1: Conclusion

The three-month Python developer internship at Creators Institute of Business and Technology (CIBT) has been an invaluable experience, significantly enhancing my professional skills. During this period, I applied my knowledge of Python programming to real-world projects, focusing on backend development using Django to build strong, efficient web applications. This allowed me to build robust web applications and improve my understanding of web development frameworks.

Throughout the internship, I demonstrated my knowledge and actively sought learning opportunities from seniors, including my mentor Dixanta Bahadur Shrestha. I collaborated effectively with my peers, minimized errors, learned from mistakes, and consistently met deadlines. I acquired company-specific knowledge and skills, working professionally and contributing to ongoing Django projects such as "Job Portal" and "Cashflow Management." I leveraged my academic background in Python, AI, machine learning, NLP, and algorithms to develop real-world applications. This demonstrates my ability to translate theoretical knowledge into practical solutions.

In addition to technical skills, I gained practical experience in data parsing, validation using regular expressions, web scraping techniques for dynamic content, API integration, and algorithm development. I also utilized Git version control for efficient collaboration and adherence to industry best practices. Despite limited exposure to AI and machine learning, I leveraged Python effectively and collaborated with peers and mentors.

4.2 Learning Outcomes

During my internship, I achieved significant learning outcomes that have greatly enhanced my skills and knowledge in Python programming and backend development. Key learning outcomes include:

- Enhanced skills in Python programming and Django Framework.
- Gained experience in web scraping techniques using regular expressions.
- Integrated APIs for efficient data processing.

- Developed and tested algorithms.
- Contributed to Django projects ("Job Portal" and "Cashflow Management").
- Practice Git for version control.
- Collaborated effectively with peers and mentors.
- Acquired company-specific knowledge and adhered to industry best practices.
- Understood professional life differences from academic expectations.
- Improved time management and punctuality.
- Recognized the importance of professional appearance.

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APPENDICES:

jobsearching-main / maincode / views.py ↑ Top

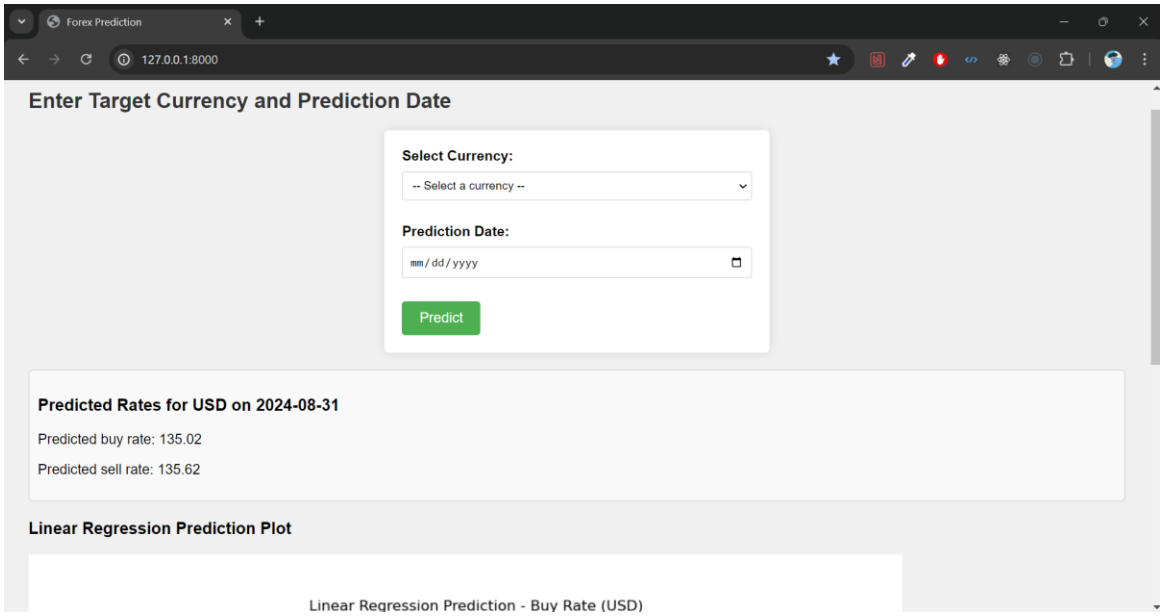
Code Blame 372 lines (238 loc) · 10.7 KB Code 55% faster with GitHub Copilot Raw

```python
from django.core.exceptions import ValidationError
from django.http import HttpResponse
from django.http import HttpResponseForbidden

from .models import notification_data
from .models import Job,SaveJob,Application


@login_required
def logout_view(request):
    auth_logout(request)
    return redirect('login')

def login_view(request):
    if request.method == 'POST':
        username = request.POST.get('username')
        password = request.POST.get('password')
        user = authenticate(username=username,password=password)
        if user is not None:
            login(request, user)
            return redirect('home')
        else:
            messages.error(request, 'Invalid username or password.')
    return render(request, 'registration/login.html')
```



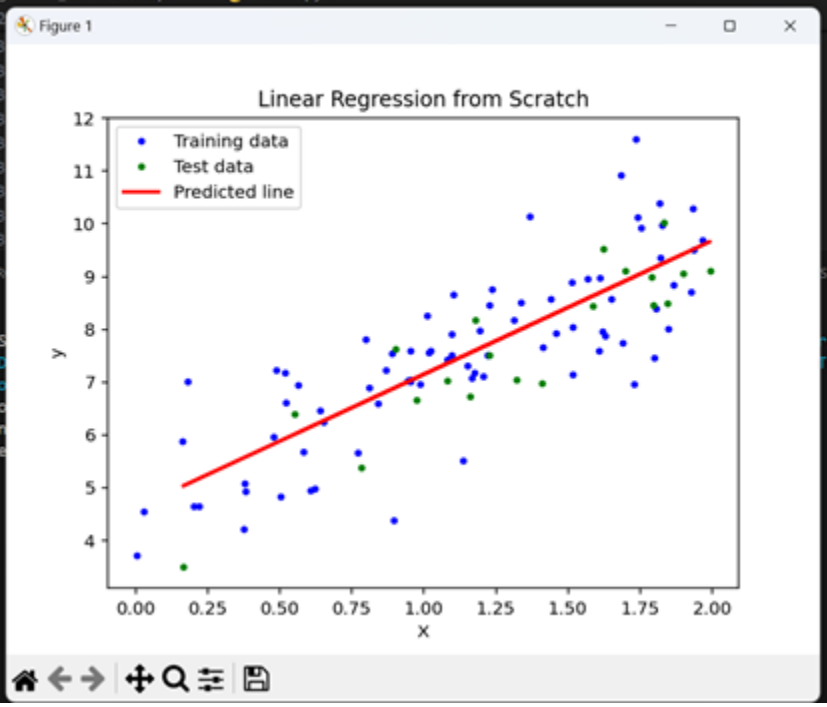
jobs_nepal_regex_scrap.csv

Task_1 JobsNepal Scrapped Completed > csv > jobs_nepal_regex_scrap.csv > data

```
Job Title,Company,Location,Category
Crew Member (All-rounder),JobsNepal.com Direct Recruitment Service,Kathmandu,Hospitality / Hotel
Project Officer,"Hilly Region Development Campaign (HRDC), Jajarkot",Jajarkot,"Development and Project, NGO/INGO/Social work, Agriculture/Livelih
Finance Officer,Centre for Mental Health &amp;amp; Counselling Nepal,Birendranagar Surkhet,
Senior PHP Developer,GreenCodes Nepal,"Information Technology, Web Designing &amp;amp; Programming, Engineering - Software, Computer - Prog
Vacancy Announcement for Various Posi  Col 4: Category  9;s Rehabilitation Centre (WOREC),"Kathmandu, Dhanusha, Kailali, Dang, Sarlahi, Rukum, Mahott
PROJECT MANAGER,Mercy Corps,Lalitpur,Development / INGO
Terms of Reference (TOR) for Establishing water quality testing mini-laboratories,Rural Reconstruction Nepal,Kathmandu,"Development and Project,
Request for Quotation (RFQ) For the selection of supplier/registered companies for Installation of Bio-Sand Filter In Ekdara Rural Municipality a
Vacancy Announcement for the Post of Admin Finance Officer,SabalNepal,Terai Region,Administrative / Management
"Request for Proposal-Scoping Study, Development, and Implementation of Local Insurance Products for Water Supply and Sanitation Infrastructure",
Research Associate,SW Nepal Pvt Ltd,Kathmandu,"Development and Project, Research, Business Development"
"EXPRESSION OF INTEREST (EOI) AND QUOTATION  For Procuring Stationery Materials, School Bags and Uniform Under SIKAI Project",VSO Nepal,Lalitpur,
Invitation for Bids,Lumbini Integrated Development Organization,Kapilvastu,"Development and Project, Expression of Interests, Tender Notice, Bid"
Program Officer /  Finance and Admin Officer,Sancharika Samuha Nepal,Lalitpur,"Accounting and Finance, Social Science, Development and Project, F
Call for Expression of Interest (EOI),Yuwalaya,Lalitpur,"Development and Project, Expression of Interests, Tender Notice, Bid"
Head of Finance and Operations,Renewable World,Kathmandu,"Accounting and Finance, Development / INGO"
Vacancy Announcement for Various Positions,Community Development Centre (CDC),Dhangadhi,"Accounting and Finance, Development and Project, Finance
Procurement Notice - Road Safety Expert/Team Leader:,UNDP,Kathmandu,"Transportation, Engineering - Civil, Development and Project"
Procurement Notice - Legal Expert,UNDP,Kathmandu,"Legal, Development and Project, law"
Research Assistant,CREHPA,"Dhanusha, Sarlahi","Development and Project, Research, Development / NGO"
Procurement Notice - Mechanical Engineer,UNDP,Kathmandu,"Engineering - Mechanical, Development and Project"
Procurement Notice - GESI Specialist,UNDP,Kathmandu,"Public Health, Social Science, Development and Project"
Terms of Reference (TOR) of Consultant: School Construction Engineer,Street Child of Nepal,Jajarkot,"Engineering - Civil, Development and Project
Various Positions,CRS Nepal,"Kathmandu, Rukum West, Jajarkot","Engineering - Environment, Development and Project"
Invitation to sealed Tender For Long Term Service Agreement for Hotel Services and Vehicle Hiring Services,ADRA Nepal,Lalitpur,"Hotel / Resort Bu
REQUEST FOR PROPOSAL – Curriculum Development Specialist,MinErgy Private Limited,Lalitpur,"Expression of Interests, Tender Notice, Bid, Developme
```

linear2.py

regression_test self completed > linear2.py > ...



Python

~/OneDrive/Desktop/INTERN C
TERN CODE/Python AI Intern

arithmetic_minimize-more.ipynb M Untitled-1.py

C: > Users > gunar > OneDrive > Desktop > Untitled-1.py > ...

```
57
58  if operation in operations_set:
59      operator = operations_set[operation]
60      expression = f"{num1} {operator} {num2}"
61      result = eval(expression)
62      print(f"The {operation} of {num1} and {num2} is {result}")
63  else:
64      print("Unsupported operation")
65
66
```

PROBLEMS 5 OUTPUT DEBUG CONSOLE TERMINAL PORTS JUPYTER POSTMAN CONSOLE COMMENTS

```
PS C:\Users\gunar\OneDrive\Desktop\INTERN CODE\Python AI Intern Code> & "c:/Users/gunar/OneDrive/Desktop/
 c:/Users/gunar/OneDrive/Desktop/Untitled-1.py
Enter Text: Hello bot, give me a sum of 1000 and 2000
Operation: sum
Operation Symbol: +
Numbers: ['1000', '2000']
The sum of 1000 and 2000 is 3000
PS C:\Users\gunar\OneDrive\Desktop\INTERN CODE\Python AI Intern Code>
```

shareBAZAR.py M

Task_10 Completed > shareBAZAR.py > ...

```
86  # %%
87  # Extracting data within <tbody> tags
88  import re
89  tbody_pattern = r'<tbody>(.*?)</tbody>'
90  tbody_data = re.findall(tbody_pattern, response_html, re.DOTALL)
91
92  matches_data_all = []
93
94  # Iterate over each element of tbody_data and extract data within <td> tags
95  for data in tbody_data:
96      matches_data = re.findall(r'<td.*?>(.*?)</td>', data, re.DOTALL)
97      matches_data_all.extend(matches_data)
98
99  print("TBody:", matches_data_all)
100
```

PROBLEMS 5 OUTPUT DEBUG CONSOLE TERMINAL PORTS JUPYTER POSTMAN CONSOLE COMMENTS Python

```
90', '8,494,598.70', '314', '1.10', '5.00', '0.64', '2.94', '1.10', '417.00', '152.40'], ['8', '<a\n
        href="https://www.sharesansar.com/company/albsl"\n                    title="Asha Laghubitta Bittiya
 Sanstha Limited">ALBSL</a>\n              ', '52.32', '726.00', '780.00', '726.00', '768.90', '762.82', '34,038
.00', '740.00', '25,964,810.20', '379', '28.90', '54.00', '3.91', '7.44', '0.79', '903.10', '543.00'], ['9', '<a\n
                    href="https://www.sharesansar.com/company/alicl"\n                    title="Asian Lif
e Insurance Company Limited">ALICL</a>\n              ', '38.69', '552.00', '558.40', '551.00', '552.00', '554.4
8', '26,976.00', '552.60', '14,957,619.40', '159', '-0.60', '7.40', '-0.11', '1.34', '-0.45', '812.00', '517.50'],
 ['10', '<a\n                    href="https://www.sharesansar.com/company/anlb"\n                    titl
e="Aatmanirbhar Laghubitta Bittiya Sanstha Limited">ANLB</a>\n              ', '54.09', '2,020.00', '2,115.00',
'2,020.00', '2,081.00', '2,082.39', '1,871.00', '2,045.00', '3,896,155.00', '56', '36.00', '95.00', '1.76', '4.70'
, '-0.07', '2,651.00', '403.80'], ['11', '<a\n                    href="https://www.sharesansar.com/company/ap
```


STAY HUNGRY|STAY FOOLISH
STEVE JOBS
SKETCH WORLD