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**HX8001 PROFESSIONAL READINESS FOR
INNOVATION, EMPLOYABILITY AND
ENTREPRENEURSHIP**

AN IBM PROJECT

PERSONAL APPLICATION TRACKER APPLICATION

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PERSONAL EXPENSE TRACKER APPLICATION

Abstract

Personal expense tracker application will maintain data of daily, weekly, monthly or yearly expenses. The expenses and earnings are maintained in a simple and intuitive way thus making the user to access the required categories easily making it an eco-friendly application.

Introduction

Personal Expense Tracker is an essential application in our day-to-day life which helps users keep track of their expenses in every mode of transaction they use i.e. (E-pays, Debit Cards, UPI ...etc.). Instead of Blindly spending the money it helps the user to keep track of how much money spent and can create a deadline to manage their expenses. Using this application user can frame a budgeting plan and can keep track of their expenses in an organized way. This helps the user to maintain a proper balance between their budgeting plan and expenditure.

Existing Work

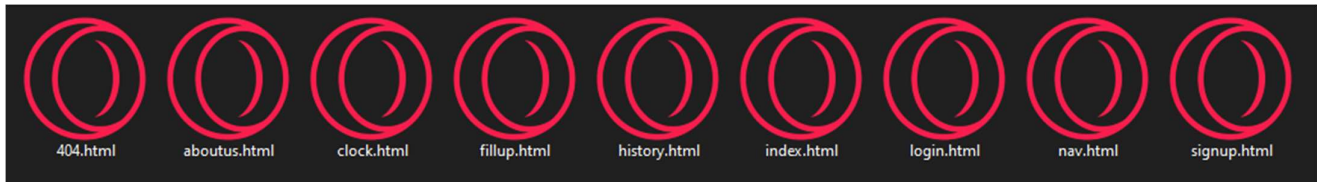
The idea of personal expense tracker application was inspired from the paper “Expense Manager Application - 2020 by Velmurugan A, Albert Mayan J, Niranjana P and Richard Francis”. This existing work is based on creation and implementation of expense tracker application for android operating system. In this work, the application is made to be very lite in terms of application size which makes sense. With minimum hardware or no extra hardware, this existing work performs well since it has been optimized for smooth experience for the users. The motive of this work to generate an application for android users since the number of expense tracker application mainly for expenses management is few in number and also the user experience and its interfaces are not user friendly which had been improved in this work which gradually increased the usage of this application.

Proposed Work

Un - Dee is an expense tracker application which helps the users to maintain a perfect balance between their expenses and budgeting plan. This application helps the user to create a budget plan by considering their necessary expenses and by viewing their previous month's budget plan and build an efficient budget design based on it. When the user's expenses reach the budgeting plan's threshold limit the user will be notified and the user can change their expenses or

budgeting plan based on it. Digital transactions like card payments, upi's are taken into account directly and the non-digital payments should be entered by the user manually.

Plan and Working of our Site



We have 9 directories to our website each made of HTML, JS and CSS. We used Bootstrap CSS as the base. Starting with face of the site, the **index.html** showcases the information about the site itself and what kind of service we offer in the site. **404.html** provides the basic “Not Found” error template for our site.

Site is functional using FLASK module to construct. Login page and sign in send and fetch data from **ibm_db2**. Every page is protected against unintended entering of a webpage. Dashboard shows the basic info about the user and their expenditure using various kinds of graphs and APIs and all other webpages are honed for quality improvisation and for best visual experience.

APIs used

- Email API (To send email after registration and notify when the expenses are more than income.)
- Time API (To display the current time)
- Currency Converter API (To convert currency)

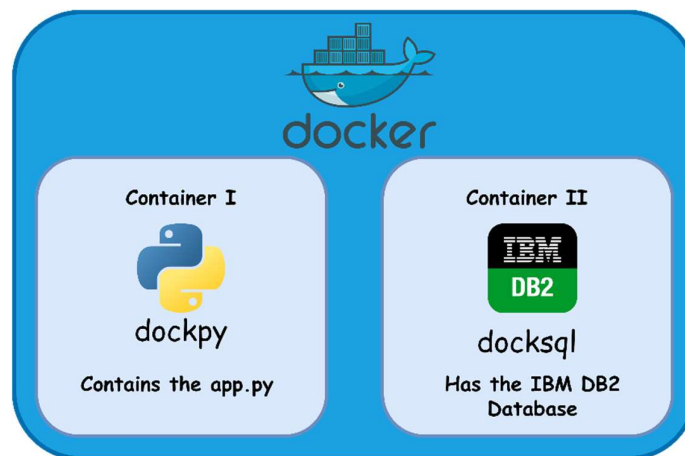
The site works best on chromium-based browser as most of the best supported html tags are implemented in it. As from the images, CSS and JS, they are uploaded to IBM's bucket storage to make the docker even more lightweight and for more security. To prevent people from getting stuck or lost, we implemented IBM Watson Assistant to assist the users in the pompous way to make them to understand what they can do and help them achieve their goals.

Functional Blocks

The functional block of this project is both Docker and Kubernetes. Docker is to containerize the flask application and Kubernetes is to deploy the site using the docker image and to expose the site publicly.

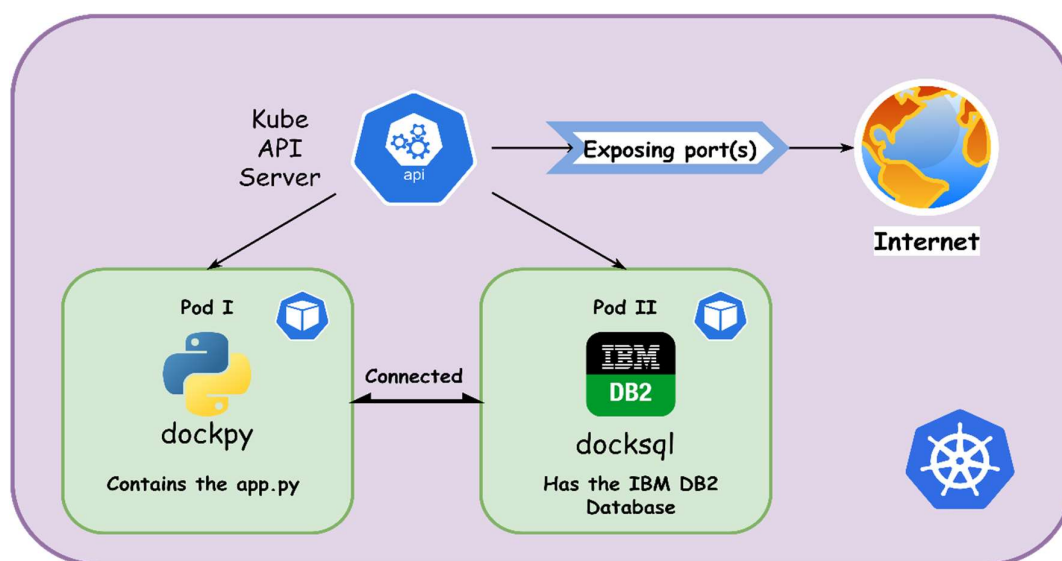
There are a lot of constraints when implementing Docker and Kubernetes due of the complexity of having 2 different containers in the same pod. Because of the DHCP server and other performance issues.

Docker



As of the above figure, we have used 2 different containers one for hosting the site via flask and other for hosting a database server. The reason we didn't go up with IBM's Cloud DB2 that's been offered, because we find it slow as it's located in a far-fetched area, which will be causing a chain reaction that makes the entire working of the site slow. Two images were pulled from the docker site (python and ibm_db2) both tagged latest and used for the project after satisfying criteria that the project required. Images are built by docker-compose because we're working on 2 images, to fasten things up composing was our viable idea.

Kubernetes



Using 2 of the docker images, we wrote a deployment YAML for Kubernetes which had 2 pods. These two pods are capable of communicating with each other as they are connected by a single cluster IP. After successfully deploying the Kubernetes deployment, we exposed the port using NodePort service so that its exposed publicly, for evaluation by IBM Team.

Conclusion

We put our time and knowledge to visualize this wonderful vision of ours from our project title, Personal Expense Tracker and happened to name our site as **Un – Dee**. There are a lot of added features that our site has that Spendee (our example site) lacks. We made sure to that our idea was to improve the way of making the customers understand what it means to save their money before it stops flowing and the importance of rationing money like edibles for the near future.

Why Un – Dee?

Here are some reasons why you should,

- **User friendly:** Un - Dee can be operated easily by any person and it doesn't need any special expertise to operate our application. User can easily navigate through sessions and sort out the inbuilt help in case of any issues.
- **Built-in currency converter:** Un - Dee has an inbuilt currency converter which helps the users to use it in any region of the world and no third-party application services are involved. User can easily convert from one currency format to another according to the day currency ratio.
- **Comparison:** Un - Dee provides a graph based on the user's previous month expenditure and budget plan which helps the user to create the current month budget plan more efficiently by reducing unwanted expenses.
- **Alerts:** Un - Dee provides alerts to the registered email-id when the budget plan threshold is reached which makes the user to reduce their unplanned expenses.
- **Navigation:** Un - Dee has several widgets in the homepage like dashboard, notifications, analytics, etc... to navigate easily from one section to another and our Watson Assistant can route them all to users in the most effective way for navigation around the site.
- **History:** A detailed view of transactions is provided under the linked account with description of for what the money is spend which helps the user keep account of every transaction.
- **Security:** Un - Dee doesn't use any third-party services so users don't have worry about third party privacy policies. Un - Dee values the user privacy so it lets the user decide what to share and what not to apart from basic requirements for the functioning of the app.