PERSONAL EXPENSE TRACKER APPLICATION

SETTING UP APPLICATION ENVIRONMENT

Expense tracking app development is popular among businesses for tracking their expenses and efficiently managing a budget. On the other hand, people use expense tracking to manage their personal finances and prevent unaccounted expenses. Businesses primarily build an expense tracking app to fully control their cash flow and revenue generation and stay prepared for the tax season.

CREATE FLASK PROJECT

Businesses handling a lot of field staff embrace expense tracking app development, mainly to take advantage of the cloud-based data streaming and mobile apps allowing real-time Bill generation and reporting of expenses. They build an expense tracking app that helps employees to track and check their expenses on the go and send their bills to the company's accounts team in real-time. This also helps in the smooth settlement of expense bills for outdoor staff in business visits.

CREATE IBM CLOUD ACCOUNT

When you register with IBM Cloud, you are set up with a Pay-As-You-Go account. Even though you provide your credit card information for account security and identity verification purposes, you can still use IBM Cloud for free by selecting products in the catalog that offer Free and Lite pricing plans. Another account type, called a Subscription account, is also available. With a Subscription account, you get many of the same features of a Pay-As-You-Go account, plus discounts for platform services and support with a more consistent billing structure.

INSTALL IBM CLOUD CLI

The IBM Cloud® Command Line Interface provides commands for managing resources in IBM Cloud. When you install the standalone IBM Cloud CLI, you get only the CLI itself without recommended plug ins or tools

curl -fsSL https://clis.cloud.ibm.com/install/osx | sh

curl -fsSL https://clis.cloud.ibm.com/install/linux | sh

iex (New-Object Net.WebClient).DownloadString('https://clis.cloud.ibm.com/install/powershell')

IBM\_Cloud\_CLI

├── LICENSE

├── NOTICE

├── autocomplete

│ ├── bash\_autocomplete

│ └── zsh\_autocomplete

├── ibmcloud

└── ibmcloud-analytics

DOCKER CLI INSTALLATION

1. Download Docker.
2. Double-click InstallDocker. ...
3. Follow the Install Wizard: accept the license, authorize the installer, and proceed with the install.
4. Click Finish to launch Docker.
5. Docker starts automatically.
6. Docker loads a “Welcome” window giving you tips and access to the Docker documentation.

Docker Engine is available on a variety of [Linux platforms](https://docs.docker.com/desktop/install/linux-install/), [macOS](https://docs.docker.com/desktop/install/mac-install/) and [Windows 10](https://docs.docker.com/desktop/install/windows-install/) through Docker Desktop, and as a [static binary installation](https://docs.docker.com/engine/install/binaries/). Find your preferred operating system below.

CREATE AN ACCOUNT IN SENDGRID

1. Visit: https://app.sendgrid.com/login in your internet browser.
2. Enter the user credentials shared with you. ...
3. Access Settings > Sending Authentication, once you are logged in.
4. Choose Get started to set up your Domain Authentication and Link Branding. ...
5. Choose your email host and follow the steps

Sendgrid is a cloud-based SMTP provider that is integrated with your system to send emails from your company domain. In order to link your email Domain to your SendGrid account there is a small set-up required.

IMPLEMENT WEB APPLICATION

Implementation is **the process of building the web according to its design**. A web implementor creates hypertext markup language (HTML), Common Gateway Interface (CGI) programs, and/or Java scripts and/or applets.

Web applications include **online forms, shopping carts, word processors, spreadsheets, video and photo editing, file conversion, file scanning, and email programs such as Gmail, Yahoo and AOL**. Popular applications include Google Apps and Microsoft 365.

CREATE UI TO INTERACT WITH APPLICATION

The user interface (UI) is **the point of human-computer interaction and communication in a device**. This can include display screens, keyboards, a mouse and the appearance of a desktop. It is also the way through which a user interacts with an application

CREATE IBM DB2 AND CONNECT WITH PYTHON

The CData ODBC Drivers are supported in various Red Hat-based and Debian-based systems, including Ubuntu, Debian, RHEL, CentOS, and Fedora. There are also several libraries and packages that are required, many of which may be installed by default, depending on your system. For more information on the supported versions of Linux operating systems and the required.

DRIVERS............: /etc/odbcinst.ini

SYSTEM DATA SOURCES: /etc/odbc.ini

FILE DATA SOURCES..: /etc/ODBCDataSources

USER DATA SOURCES..: /home/myuser/.odbc.ini

SQLULEN Size.......: 8

SQLLEN Size........: 8

SQLSETPOSIROW Size.: 8

INSERT commands also use the execute method; however, you must subsequently call the commit method after an insert or you will lose your changes.

INTEGRATING SENDGRID SERVICE

* Create an API Key with at least "Mail" permissions.
* Set the server host in your email client or application to smtp.sendgrid.net . ...
* Set your username to the string apikey . ...
* Set your password to the API key generated in step one.
* Set the port to 587 (or as specified below).

SENDGRID INTEGRATION WITH PYTHON CODE

It is possible to have multiple versions of Python on your computer. Some operating systems come with a version of Python already installed. If you run python --version and receive Python 2.7.x after installing Python 3, try running python3 --version to see which 3.x version of Python you have installed. This tutorial will use the python command, assuming you are working with Python 3. If you have not set up Python 3 in a virtual environment, you may need to run the command python3 .

DEVELOPEMENT OF APP IN IBM CLOUD

Cloud Developers **create applications that are served on the cloud**. The work they do is very similar to software engineers or web engineers, except that the programs Cloud Developers make run on virtual systems.

CONTANARIZE THE APP

Containerization is the packaging of software code with just the operating system (OS) libraries and dependencies required to run the code to create a single lightweight executable—called a container—that runs consistently on any infrastructure.

UPLOAD IMAGE TO IBM CONTAINER REGISTRY

A container registry is a collection of repositories made to store container images. A container image is **a file comprised of multiple layers which can execute applications in a single instance**.

DEPLOY IN KUBERNETES CLUSTERS

Kubernetes to deploy a Kubernetes cluster **on a local machine, into the cloud, or for your own datacenter**. Several Kubernetes components such as kube-apiserver or kube-proxy can also be deployed as container images within the cluster.

IDEATION PHASE

Ideation is the process where you generate ideas and solutions through sessions such as Sketching, Prototyping, Brainstorming, Brainwriting, Worst Possible Idea, and a wealth of other ideation techniques. Ideation is also the third stage in the Design Thinking process.

 we can divide ideation in these three stages: **generation, selection, and development**.

LITERATURE SURVEY ON THE SELECTED PROJECT & INFORMATION GATHERING

Assessment is about gathering the necessary information about who you are as a literacy agency, your current strengths, weakness, opportunities and threats. Remember, at this point, you are simply gathering information on the current internal and external environment facing your literacy agency; you are not making any judgments or drawing any conclusions.

PREPARE THE EMPATHY MAP



An Empathy Map consists of four quadrants. **The four quadrants reflect four key traits, which the user demonstrated/possessed during the observation/research stage**. The four quadrants refer to what the user: Said, Did, Thought, and Felt. It's fairly easy to determine what the user said and did.

IDEATION

Ideation is the process where you generate ideas and solutions through sessions such as Sketching, Prototyping, Brainstorming, Brainwriting, Worst Possible Idea, and a wealth of other ideation techniques.

PROJECT DESIGN PHASE 1



Phase 1: **Project initiation**  
  
In this stage, you need to develop a business case and define the project on a broad level. In order to do that, you have to determine the need for the project and create a project charter.

PROPOSED SOLUTION

### The Project Scope Statement provides the documented basis for making all project decisions and is used to direct the project effort and communicate the project scope to the project team and other project stakeholders. Projects that do not have a Project Scope Statement are plagued with scope creep issues.

### PROBLEM SOLUTION FIT

### The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem.

### SOLUTION ARCHITECTURE

A solution architecture (SA) is **an architectural description of a specific solution**. SAs combine guidance from different enterprise architecture viewpoints (business, information and technical), as well as from the enterprise solution architecture (ESA).

PROJECT DESIGN PHASE 2

The second phase of the project management life cycle is where all the planning happens. This is the part where you consider client requirements and stakeholders' concerns, assemble a team, establish goals and objectives, and create a project plan.

CUSTOMERY JOURNEY

From this milestone you will be continue working on the project design phase. You are expected to cover the activities given.

**FUNCTIONAL REQUIREMENT**

In this activity you are expected to prepare the functional requirement document.

**Data Flow Diagrams**

In this activity you are expected to prepare the data flow diagrams and submit for review.

**TECHNOLOGY ARCHITECTURE**

In this activity you are expected to draw the technology architecture diagram.

**PROJECT PLANNING PHASE**

In this milestone you are expected to prepare milestones & tasks, sprint schedules.

**PREPARE MILESTONES & ACTIVITY LIST**

In this activity you are expected to prepare the milestones & activity list of the project.

**SPRINT DELIVERY PLAN**

In this activity you are expected to prepare the sprint delivery plan.

**PROJECT DEVELPEMENT PHASE**

In this milestone you will start the project development and expected to perform the coding & solutioning, acceptance testing, performance testing based as per the sprint and submit them.

**PROJECT DEVELOPEMENT - DELIVERY OF SPRINT-1**

In this activity you are expected to develop & submit the developed code by testing it

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In this activity you are expected to develop & submit the developed code by testing it.

**PROJECT DEVELOPMENT – DELIVERY OF SPRINT-4**

In this activity you are expected to develop & submit the developed code by testing it.