Project Design Phase-II
Technology Stack (Architecture & Stack)

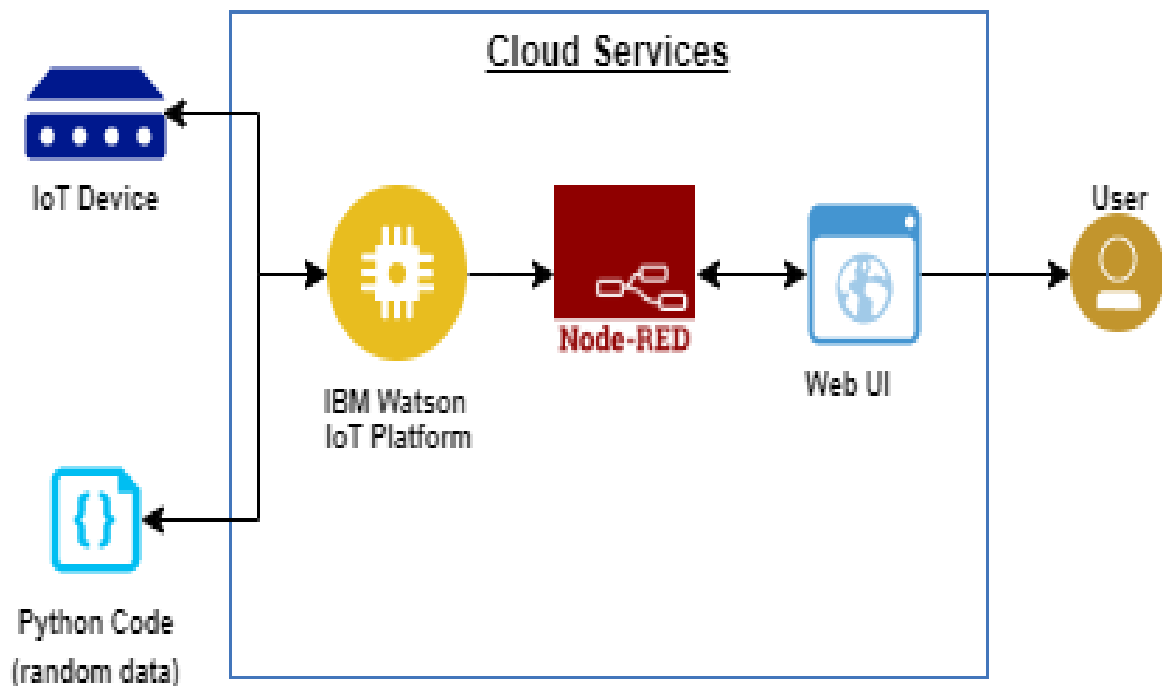| Date	16 October 2022
Team ID	PNT2022TMID41308
Project Name	Project – smart waste management for metropolitan cities
Maximum Marks	4 Marks

Summary

This code pattern explains how to build an IOT based smart waste management for the metropolitan cities with predefined values.

Flow
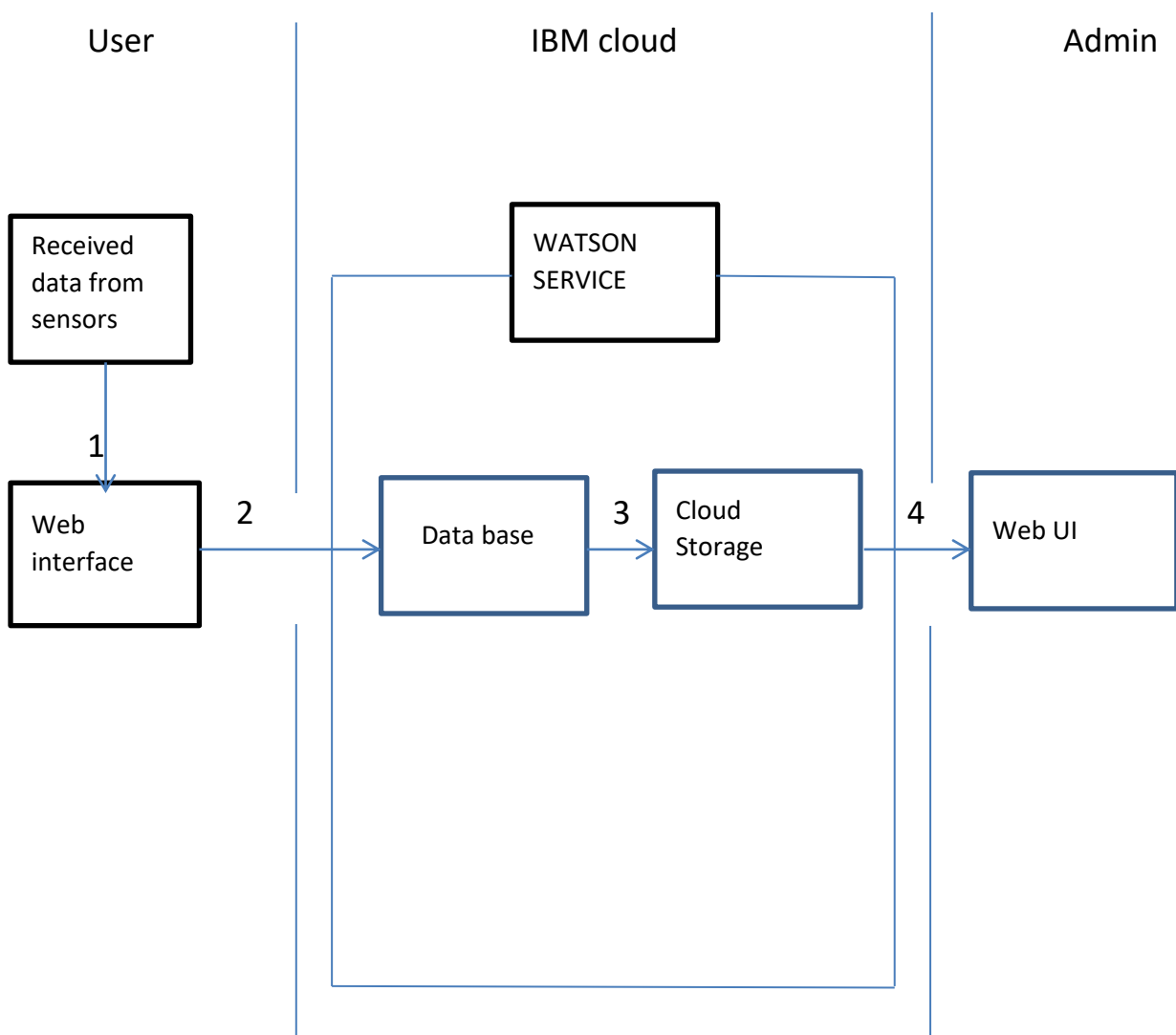
Technical architecture

Cloud Services

IoT Device

IBM Watson
IoT Platform

Node-RED

Web UI

User

Python Code
(random data)

1. Feed the data from the sensor placed in the bins to the web interface.
2. The data will display in the web page of the authority (user).
3. The collected data is sent to the data base, where the collected data and predefined data are checked and monitored if the data exceeds the predefined data the control signal send to the admin.
4. The data is provided to the cloud service and stored
5. The authority monitors the web page continuously to collect the data and send the alert to the

Component and technology

S.No	Component	Description	Technology
1.	User Interface	user interacts with Web UI, Mobile App, Chatbot etc.	Python script
2.	Application Logic-1	Random data set as threshold	Java / Python
3.	Application Logic-2	Cloud service	IBM Watson STT service
4.	Application Logic-3	Node red and web interface	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	Random data
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Security purpose and to access the system	IBM Weather API, etc.
9.	External API-2	To access the system	Aadhar API, etc.
10.	Machine Learning Model	To provide the data	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Sensors (level, weight)	Technology of Opensource framework
2.	Security Implementations	API keys, weather API and IBM cloud and Watson account	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Upgrade	IBM cloud
4.	Availability	The app contains the data indicates the level and weight	Sensors, python script
5.	Performance	The system continuously update the data	Mobile app, web UI, Chatbot