Institute of Engineering and Technology, Lucknow

AI QUESTION GENERATION AND ANSWER EVALUATION SYSTEM

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Introduction

Conducting examination and answer sheet evaluation are hectic processes. It is expensive, resource intensive and time consuming to generate questions and evaluate responses manually. Manually evaluating the answer sheet takes up a significant amount of instructors' valuable time. This project aims to build an automated examination system using Machine Learning, Natural Language Toolkit (NLTK), Python environment, Flask framework and web technologies to provide an inexpensive alternative to the current examination system. We implement a model to automatically generate questions with their respective answers and assess user responses.

Motivation

Teachers too are stressed about exams, after all, exams are a logistical nightmare and require a lot of planning. Right from setting a question paper, or rather different sets of question papers, printing those question papers and answer sheets, sending those question papers to exam centers in a secure manner, then collecting them and sending them to teachers to be corrected and finally publish the results.

Technology has made our lives easier, faster and more comfortable. Turning to our phones and the internet to answer a question is a natural instinct for many people. So, why don't we turn to technology to answer the problems of conducting exams, and make it easier?

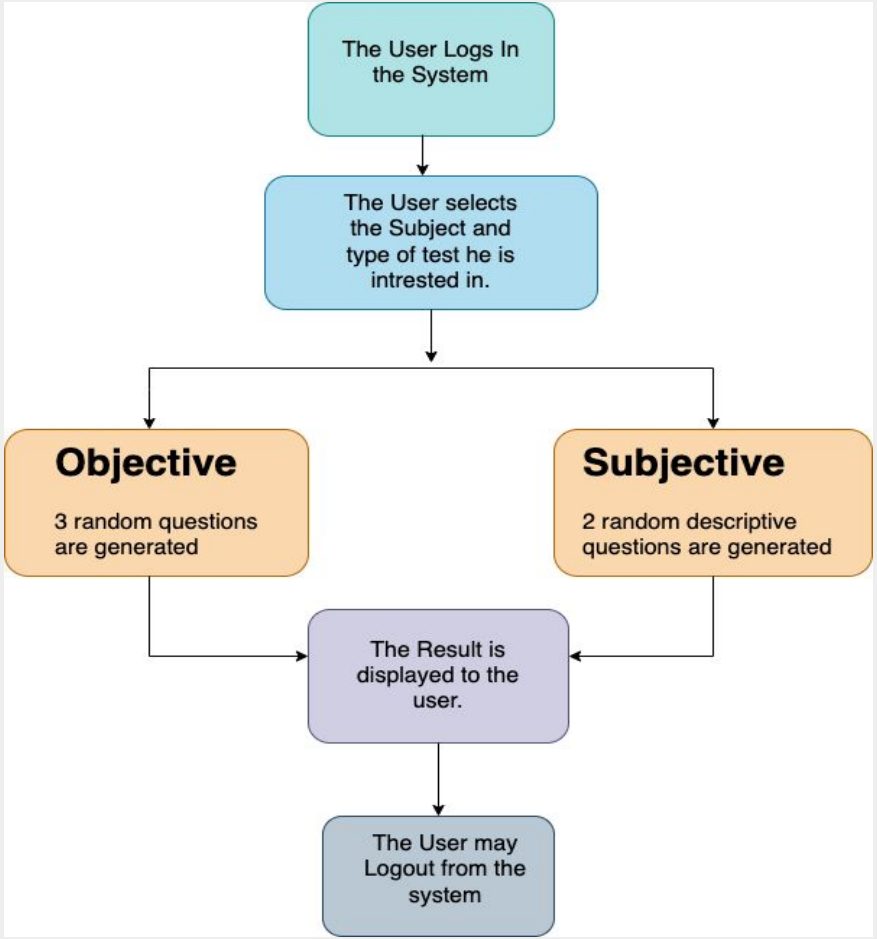
Methodology

The test taker selects the type of test he is interested in giving i.e. objective or subjective. Based on the selection the questions are generated.

If an objective test type is chosen, three questions appear where the user has to fill in the blank with the correct answer. On submitting the test the result for that particular test is generated along with max score scored in that test, the minimum score and the mean score of all the test takers.

If a subjective test is chosen, two questions appear where the user has to manually type the descriptive answer of that question.
On submitting the test the score is evaluated by comparison of the user answer with the default answer along with max score scored in that test, the minimum score and the mean score of all the test takers.

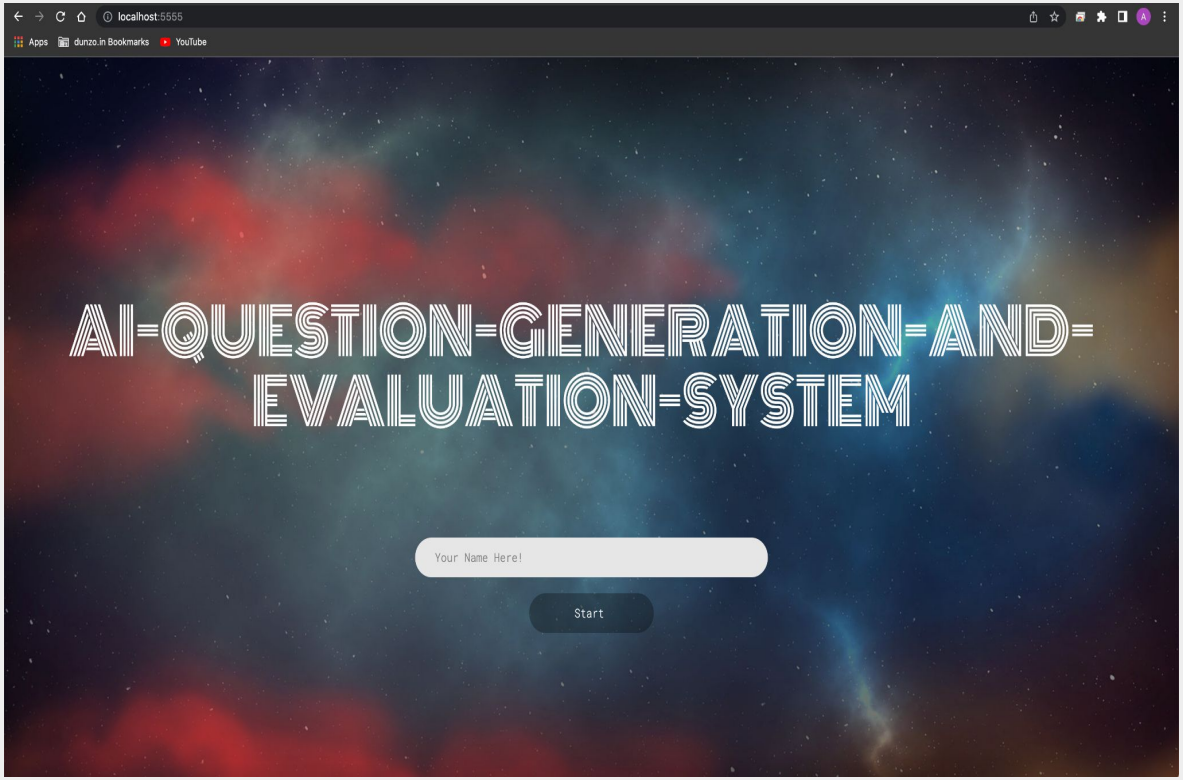
Flowchart


The User Logs In the System
The User selects the Subject and type of test he is intrested in.
Objective
3 random questions are generated
Subjective
2 random descriptive questions are generated
The Result is displayed to the user.
The User may Logout from the system

Expected Results

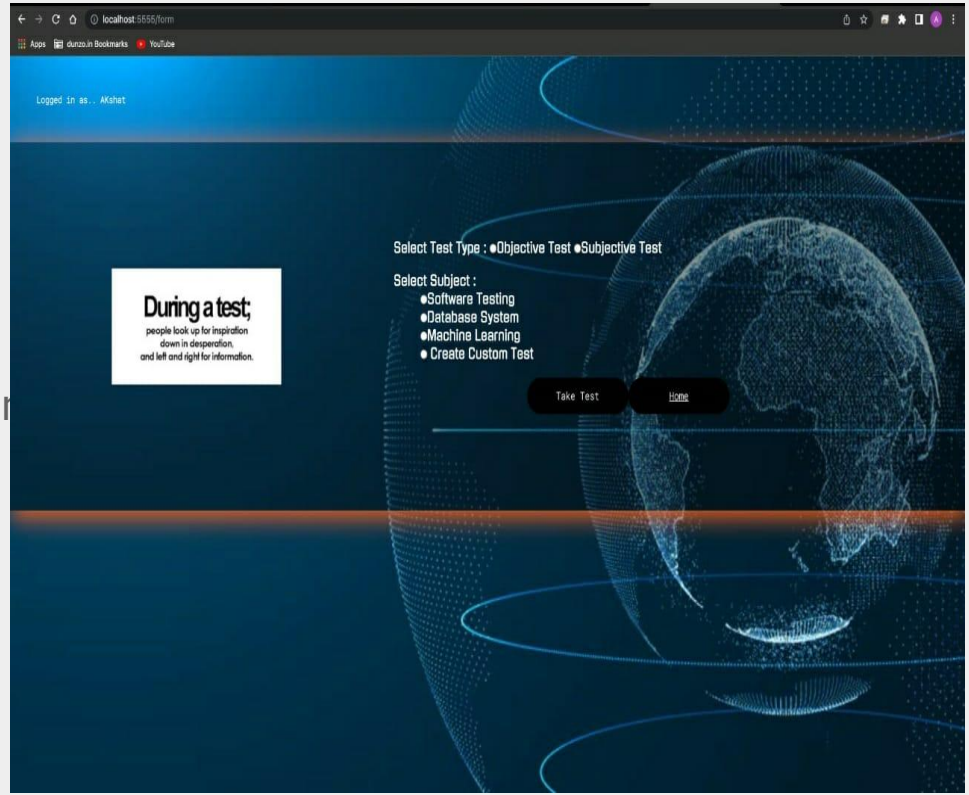
LOGIN PAGE:

At the login page or home page, users can enter their name then click on the start button to enter into the exam zone.



CHOOSING EXAM TYPE AND SUBJECT:

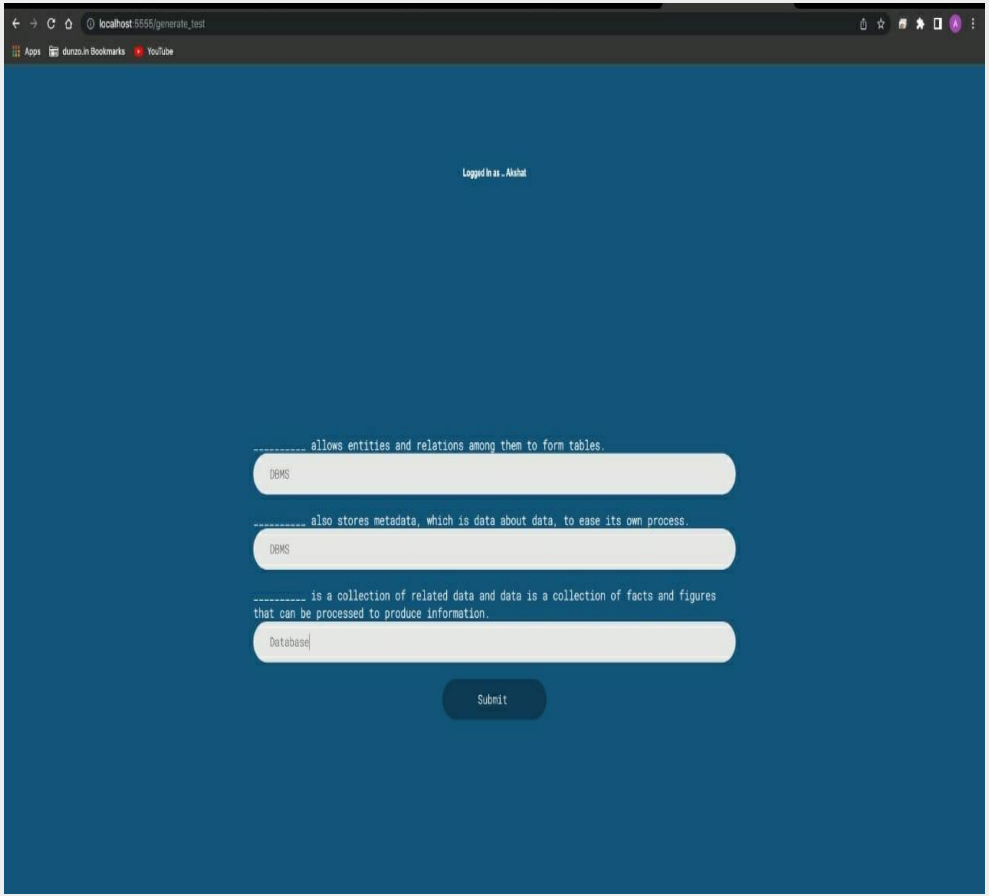
After starting the exam, users will see the below page in which they can choose the exam type and subject for which they want to give the exam. They can also create their custom test for their desired subject. Afterwards they are good to take the test.



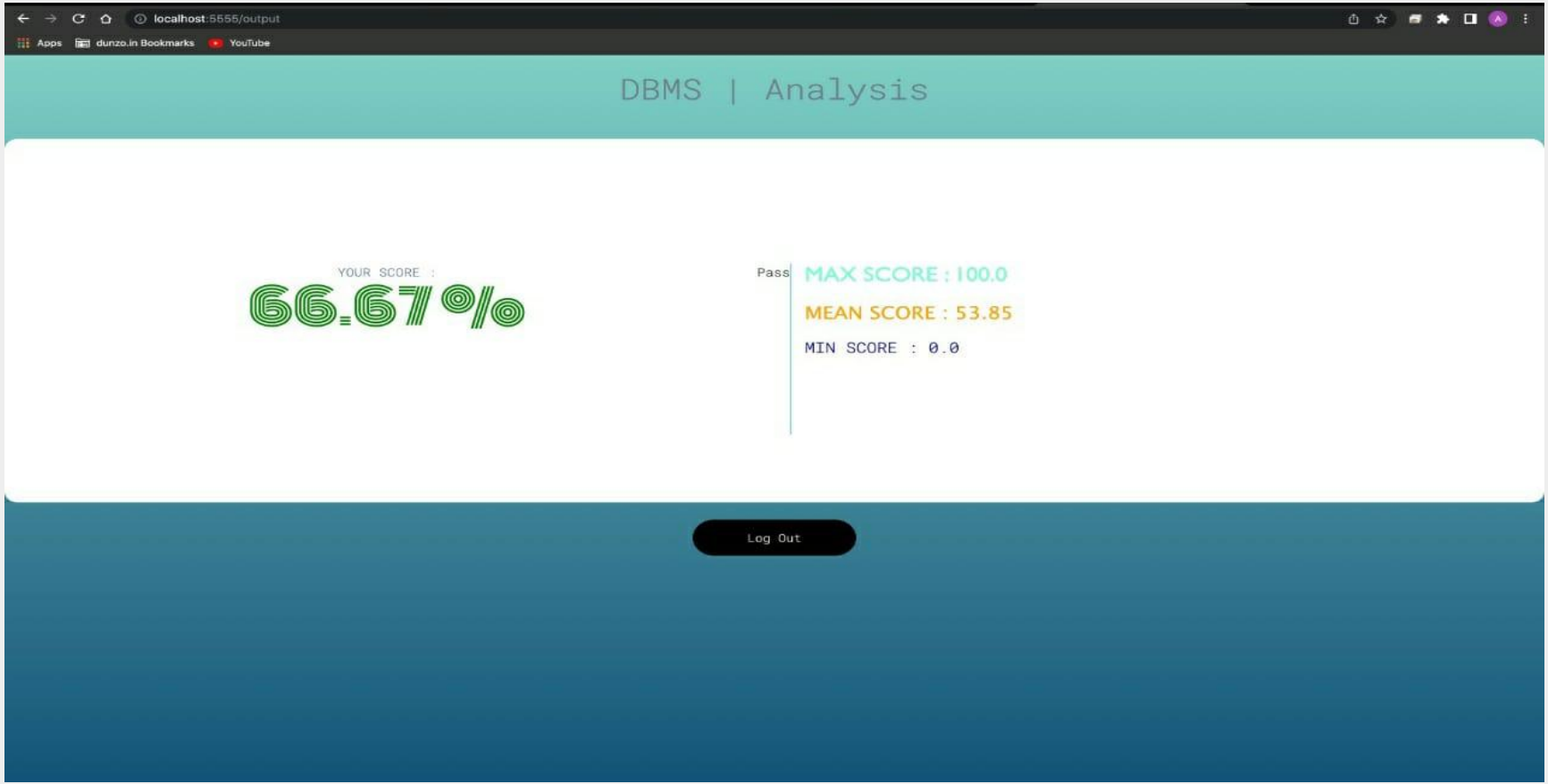
OBJECTIVE EXAM PAGE:

If a user decides to take an objective exam for a subject, then the below page will appear and the user has to give the answer in desired format i.e in one word or two word answer.

After giving all the answers, users can submit the test to check their score.



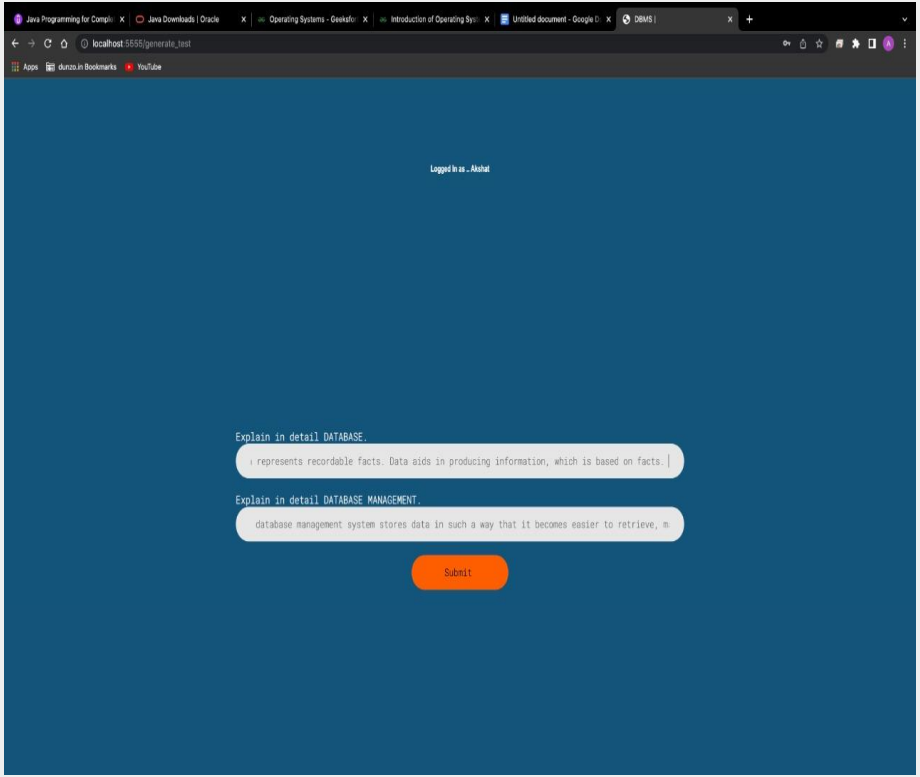
RESULT PAGE:


localhost:5555/output
Apps
dunzo.in Bookmarks
YouTube
DBMS | Analysis
YOUR SCORE :
66.67 %
Pass
MAX SCORE : 100.0
MEAN SCORE : 53.85
MIN SCORE : 0.0
Log Out

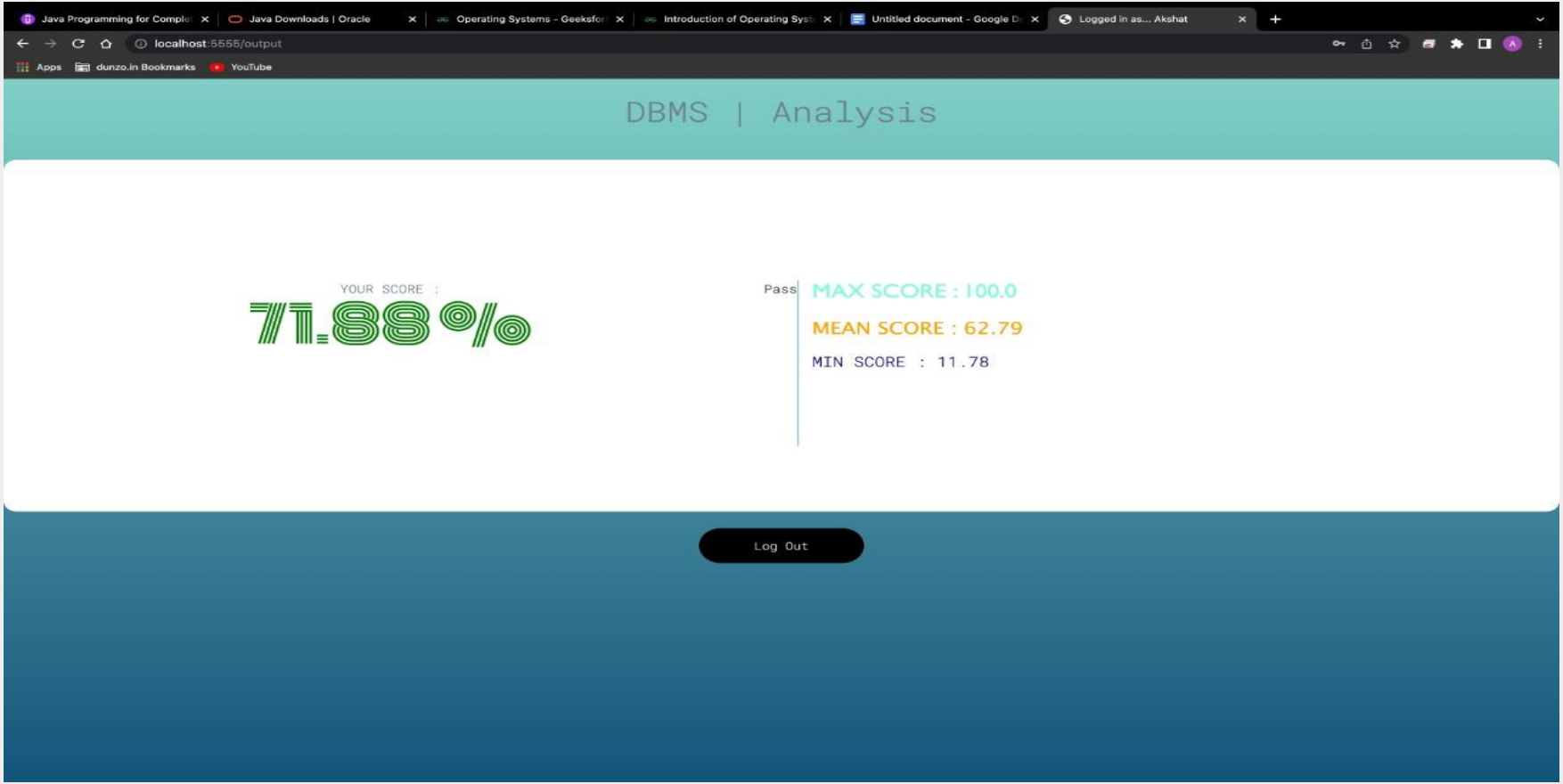
SUBJECTIVE EXAM PAGE:

If a user decides to take a subjective exam for a subject, then the below page will appear and the user has to give the answer in a subjective format like a short note.

After giving all the answers, users can submit the test to check their score.



Result Page: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Logged in as... Akshat
localhost:5555/output
Apps
dunzo.in Bookmarks
YouTube
DBMS | Analysis
YOUR SCORE :
71.88%
Pass
MAX SCORE : 100.0
MEAN SCORE : 62.79
MIN SCORE : 11.78
Log Out

Technologies Used

Python:

Python is a high-level, general-purpose and a very popular programming language. Python programming language (latest Python 3) is being used in web development, Machine Learning applications, along with all cutting edge technology in Software Industry.

Natural Language Toolkit (NLTK):

NLTK is a leading platform for building Python programs to work with human language data. It provides easy-to-use interfaces to over 50 corpora and lexical resources such as WordNet, along with a suite of text processing libraries for classification, tokenization, stemming, tagging, parsing, and semantic reasoning, wrappers for industrial-strength NLP libraries, and an active discussion forum.

NumPy:

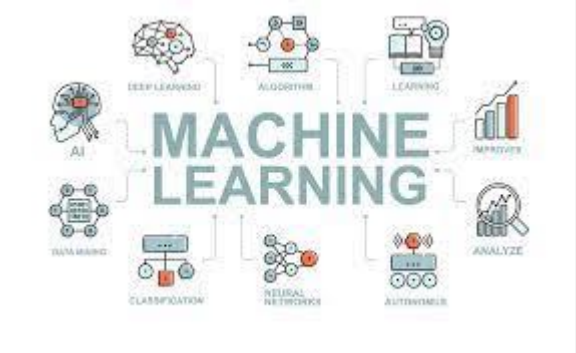
NumPy is a Python library used for working with arrays. It also has functions for working in the domain of linear algebra, fourier transform, and matrices. NumPy was created in 2005 by Travis Oliphant. It is an open source project and you can use it freely.

Flask:

Flask is a micro web framework written in Python. It is classified as a microframework because it does not require particular tools or libraries. It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions

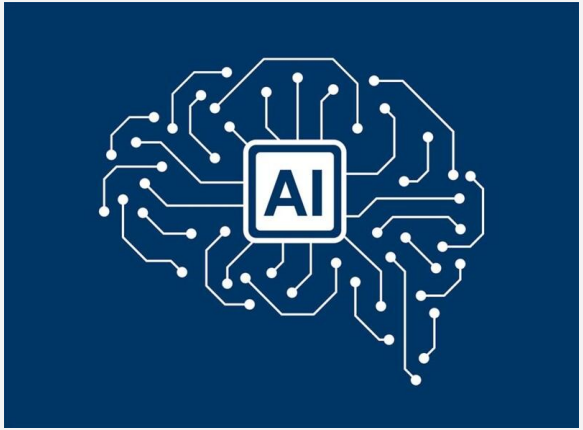
Machine Learning:

Machine Learning is the field of study that gives computers the capability to learn without being explicitly programmed. ML is one of the most exciting technologies that one would have ever come across. As it is evident from the name, it gives the computer that makes it more similar to humans: The ability to learn.



Artificial Intelligence:

Artificial Intelligence is the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. If the computers can, somehow, solve real-world problems, by improving on their own from past experiences, they would be called “intelligent”.



Functionalities

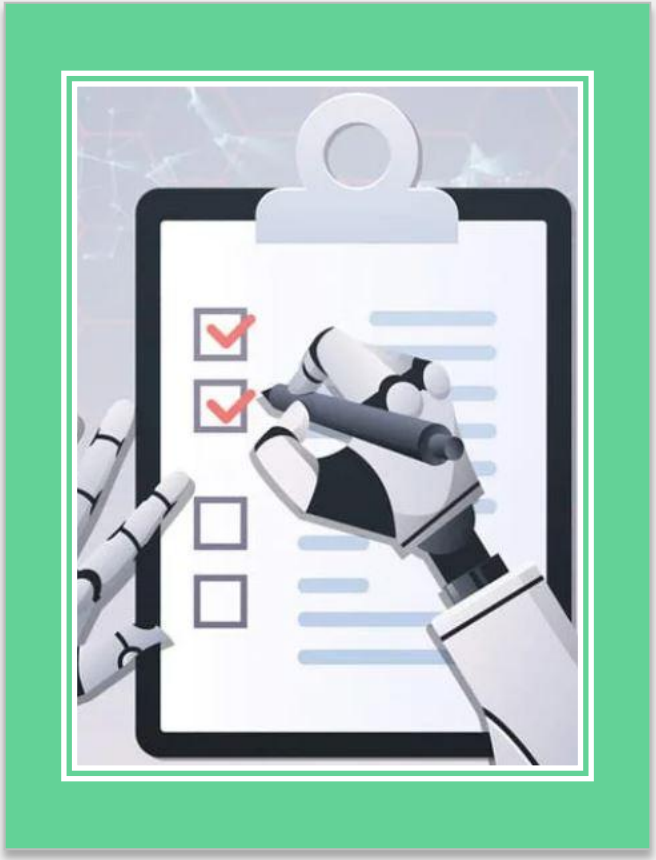
1- Logging the user.

2- Selecting the exam type.

3- Selecting the Subject.

4- Automatically generate questions from the content provided for that subject.

5- Result Analysis and Final Score.



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Thank You!