Project
Report

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Submitted

In Partial Fulfillment of

BACHELOR OF COMPUTER APPLICATIONS (BCA)

Submitted by:

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Under the Supervision of:

Ms Sakshi

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– 121001

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Declaration

I so certify that my project, "Data Analysis ," which I turned in to partially meet the requirements for the BACHELOR OF COMPUTER APPLICATIONS degree, is an original work of mine. The report, which has never before been presented for the award of a degree or certificate to any institution or university, contains the conclusions drawn from my research and observations.

SIGNATURE

Name: Dev Rawat

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Date: 7.9.25

ACKNOWLEDGEMENT

I sincerely appreciate your help, collaboration, direction, and clarity during the creation of the Data Analyzing Programs. I am appreciative of **Ms. Sakshi, the Assistant Professor, SCA**, who helped us with the assignment. This project would not have been able to be finished on schedule without her cooperative attitude, spirit of flexibility, Candor, prompt clarification, and most importantly, trust in us. Special consideration should be given to her willingness to discuss any significant work-related issues. Additionally, I want to express my gratitude to the whole faculty of the computer application department for their assistance and collaboration. For his assistance with the study, I would especially want to thank **Dr. Raj Kumar, an associate professor.**

I want to express my profound appreciation to **Prof. Dr. Suhail Javed Quraishi, HOD,** for his insightful guidance and instruction. Once more, I want to express my gratitude to the department's teachers for their assistance and collaboration. I want to express my gratitude to the department's non-teaching employees for their assistance and collaboration.

I want to express my gratitude to **Prof. Dr. Brijesh Kumar, Dean of SCA**, for her inspiration and insightful advice.

I see this as a significant turning point in my professional growth. In order to achieve my intended professional goals, I will continue to focus on improving my acquired skills and knowledge and make every effort to apply them as effectively as possible. I look forward to working with each and every one of you in the future.

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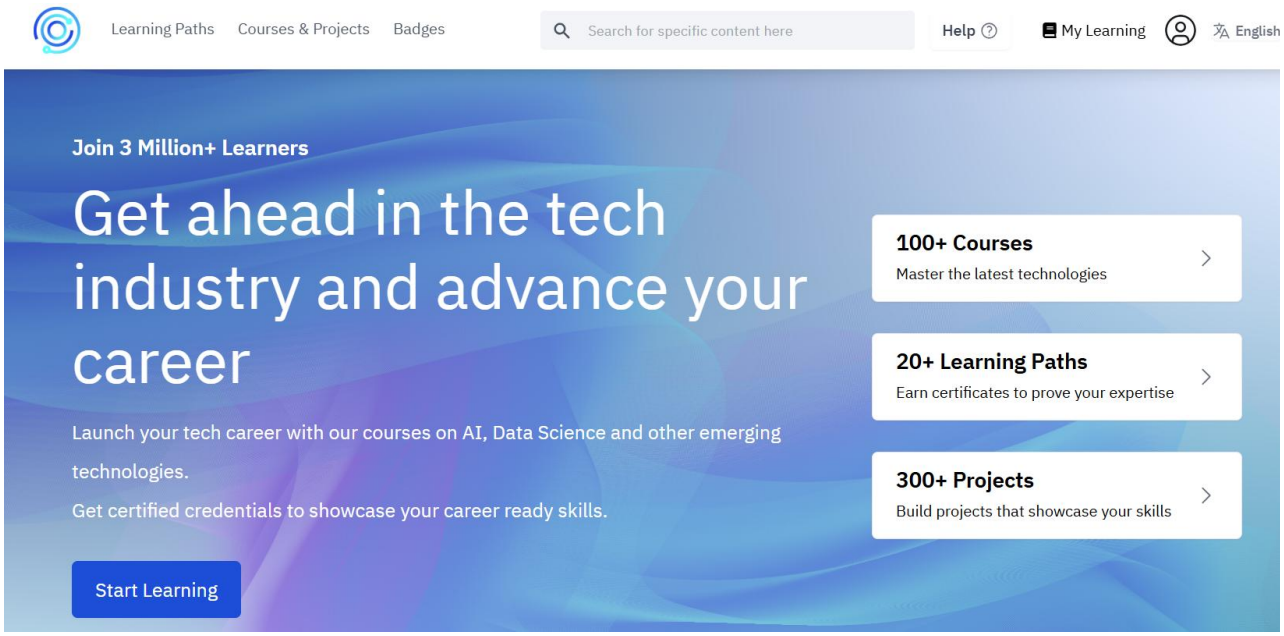
Introduction

(a) About Organization:

Cognitive Class AI is a free learning platform by IBM that offers online courses, hands-on labs, and certifications in fields like Artificial Intelligence, Data Science, and Big Data. It provides interactive training in topics such as Python, machine learning, deep learning, computer vision, natural language processing, and cloud technologies. Learners can practice directly in cognitive labs without installing software, making it beginner-friendly yet practical. Upon completion of courses, students earn digital badges and certificates that can be shared on LinkedIn or used to strengthen resumes, making Cognitive Class a valuable resource for anyone looking to build AI and data science skills at no cost.



(b) My Course

This beginner-friendly Python course will take you from zero to programming in Python in a matter of hours. Upon its completion, you'll be able to write your own Python scripts. If you want to learn Python from scratch, this course is for you.

This introduction to Python will kickstart your learning of **Python for data science**, as well as programming in general. This beginner-friendly Python course will take you from zero to programming in Python in a matter of hours.

(c) Achievements (Badges & Certifications)

Upon completing a course learners are granted a IBM skill badge and Certifications

Projects

Project 1: Student Performance Analysis using Pandas and NumPy

Objective:

Analyze student performance data to identify top performers, weak students, and insights from attendance and scores.

Methodology:

- Created a dataset of 10 students with marks in Math, Science, English, attendance, sports and cultural scores.
- Loaded and analyzed the data using Pandas.
- Calculated total marks, percentage, standard deviation, and ranking using NumPy.
- Identified top 5 students, weak students (<40%), and computed correlation between attendance and percentage.

Results:

- Top 5 students and their ranks were identified.
- Weak students with percentage <40% were flagged.
- Positive correlation observed between attendance and percentage.

Project 2: Heart Disease Prediction and Analysis using Pandas and NumPy

Objective:

Analyze heart disease dataset to extract insights and compute a risk score for patients.

Methodology:

- Loaded heart disease dataset and removed duplicates.
- Checked for missing values and performed descriptive statistics.
- Analyzed gender distribution, disease prevalence by age group, and calculated risk score using a weighted formula.
- Computed correlation between age and maximum heart rate.

Results:

- Average risk score by gender and risk comparison for patients with/without disease were calculated.
- High cholesterol patients (>300) were identified.

Project 3: Delhi Traffic Data Analysis using Python DataFrames

Objective:

Analyze Delhi traffic data to identify patterns, congestion hotspots, accident-prone locations, and pollution correlation.

Methodology:

- Simulated traffic dataset with Date, Time, Location, Vehicle Count, Accidents, Avg Speed, and AQI.
- Removed duplicates and checked for missing values.
- Calculated average traffic by location and time.
- Identified accident hotspots and top congested days.
- Computed correlation between traffic and AQI.

Results:

- Locations like Connaught Place and NH-24 had higher traffic counts.
- Peak traffic times and accident-prone areas were identified.
- Positive correlation observed between traffic volume and AQI.

Conclusion

This report showcases the skills acquired through the 'Python for Data Science' certification, applying Pandas and NumPy for data analysis across different domains. The projects highlight practical data handling, statistical analysis, and insightful reporting.