DEPARTMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)
MAWLANA BHASHANI SCIENCE AND TECHNOLOGY UNIVERSITY
SANTOSH, TANGAIL-1902
"STUDENT TRAINING PROGRAM FOR DIGITAL SKILLS DEVELOPMENT"

Course Title: Basic Python Programming

Batch no: BPP-02

Python project on University Scholarship Eligibility

Topic: Design a python program that determines if a student is eligible for a university scholarship for PhD program in USA based on following requirements: GPA: 3.50 or above, Publication: 3 or above, IELTS: 7.0 or above, GRE: 300 or above.

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University Scholarship Eligibility

❖ Why I Take This Topic?

There can be many reasons for choosing this particular topic, depending on applicant goals, interests, and background. Here are some common reasons for selecting this topic like **University Scholarship Eligibility**:

- **Practical Application**: Eligibility projects are useful in real-world scenarios, like determining qualifications for scholarships, grants, or promotions. Working on such a project shows how to translate theoretical requirements into a functional, data-driven program, which can be applied in many professional fields.
- **Learning Opportunity**: Eligibility projects typically involve important programming concepts, such as data handling, conditional statements, and the application of logic-based decision-making. It's a great way to deepen your knowledge of Python and practice using libraries like pandas and numpy.
- **Portfolio Building**: Such projects make excellent additions to a portfolio, as they highlight applicant skills in data analysis, programming logic, and condition-based assessments. Prospective employers or academic programs often look for candidates who can apply programming to solve real-life problems.
- **Experimentation with Realistic Data**: This project allows applicant to work with a small dataset, which is realistic and relatable. Handling data and calculating eligibility percentages provides a hands-on way to understand the implications of each factor, such as GPA, IELTS score, etc.

❖ How can it help a student and Universities authorities?

For Students:

- **Clear Understanding of Scholarship Criteria:** Students can gain a better understanding of the exact requirements for scholarships. By having access to an eligibility model, they can see how their GPA, publications, test scores (like IELTS or GRE), and other factors contribute to their chances of receiving a scholarship. This can help them prioritize areas for improvement, such as boosting their GPA or gaining more extracurricular experience.
- **Improved Application Strategy:** Students can use eligibility models to assess which scholarships they are most likely to qualify for based on their profile, allowing them to focus on applying for the ones with the highest probability of success, increasing their chances of winning a scholarship.
- **Time and Effort Saved:** With the eligibility criteria clearly defined and accessible through such models, students don’t have to manually sift through different scholarship options. Instead, they can automatically determine which ones are the most relevant to their profile and proceed accordingly.

- **Increased Motivation:** Knowing the specific criteria and how close they are to meeting them can motivate students to work harder in areas where they may be lacking (e.g., studying for the IELTS or GRE, publishing research, or improving grades). This clarity can help students focus on their strengths and improve their weaknesses.

For University Authorities:

- **Streamlined Scholarship Evaluation:** University authorities can use eligibility models to automate and streamline the process of evaluating scholarship applications. This reduces the manual workload involved in checking each student's qualifications and ensures faster and more accurate assessments.
- **Data-Driven Insights for Future Scholarships:** By analyzing the eligibility data from previous years, universities can identify trends and patterns in student performance and needs. This data can help them adjust scholarship criteria, fund distribution, or even create new scholarship opportunities to better serve the student body.
- **Better Communication with Students:** Universities can use eligibility models to communicate clearly with students about the scholarship opportunities available and the specific criteria required. This reduces confusion among students and helps them apply for scholarships they are eligible for, thus improving the overall application experience.
- **Enhanced Reputation and Attractiveness:** By offering an automated, transparent, and objective scholarship selection process, universities can enhance their reputation among prospective students. When students see that they have clear criteria to meet, they are more likely to be attracted to the institution, knowing that their efforts will be fairly recognized.

❖ What are the future aspects about this topic?

The University Scholarship Eligibility topic offers numerous opportunities for development, refinement, and practical application in the future. Both students and university authorities can benefit from enhanced systems, automation, and data-driven insights. Here are potential future aspects to improve or expand on this topic:

i. Integration with University Systems

- Automation in Scholarship Applications: In the future, universities could integrate the eligibility model directly into their online application systems. This would automatically assess students' eligibility as they fill out their applications, providing instant feedback on whether they qualify for specific scholarships.
- Real-Time Eligibility Assessment: Students could receive real-time assessments of their scholarship eligibility as they update their information (e.g., after submitting a new publication, improving their GPA, or achieving higher test scores). This would ensure that students always have up-to-date information on their chances of securing funding.

ii. Incorporating More Complex Criteria

- Additional Factors: As scholarship opportunities become more diverse, universities may include additional eligibility criteria such as leadership roles, volunteer experience, personal statements, or even extracurricular achievements like sports or artistic endeavors. These could be incorporated into the eligibility models.

iii. AI and Machine Learning Enhancement

- Predictive Models: Using machine learning algorithms, universities could predict students' future eligibility based on their academic progress. For example, a model could forecast a student's GPA by the end of the semester and predict if they're likely to meet the scholarship criteria by graduation.

iv. Student-Driven Scholarship Platforms

- Student Portal Development: Universities could create portals where students can input their data (GPA, publications, test scores) and automatically see all the scholarships they qualify for, along with details on the application process. This portal could also allow students to track their progress and receive notifications when they become eligible for new scholarships.
- Dynamic Eligibility Updates: Platforms could automatically update students on their eligibility for various scholarships as they complete additional academic requirements or gain new achievements (like completing a research project or obtaining new publications).

v. Cross-University Scholarship Networks

- Collaborations Between Universities: Universities could partner with each other to create a shared scholarship eligibility system. This system could allow students to check their eligibility for scholarships across multiple institutions based on standardized criteria, making it easier for students to apply to several universities.
- Regional or International Scholarship Opportunities: Expanding eligibility systems to include regional or international scholarships could allow students to compare eligibility for opportunities across borders, encouraging greater mobility and access to global education.

Python code given below:

Input:

```
import pandas as pd
import numpy as np
# Create mock data for 15 students
np.random.seed(42)
# Define acceptable IELTS scores
ielts_scores = [6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0]
data = {
    'CGPA': np.round(np.random.uniform(3.0, 4.0, size=15), 2),
    'Publications': np.random.randint(1, 10, size=15),
    'IELTS': np.random.choice(ielts_scores, size=15),  # Randomly select from valid IELTS scores
    'GRE': np.random.randint(280, 340, size=15),
}
# Convert to DataFrame
df = pd.DataFrame(data)
def calculate_scholarship_eligibility(cgpa, publications, ielts, gre):
    eligibility_percentage = 0
    # CGPA requirement
    if cgpa >= 3.5:
        eligibility_percentage += 25
    # Publications requirement
    if publications >= 3:
        eligibility_percentage += 25
    # IELTS requirement
    if ielts >= 7.0:
```

```
        eligibility_percentage += 25
    # GRE requirement
    if gre >= 300:
        eligibility_percentage += 25
    return eligibility_percentage


# Apply eligibility calculation to each row
df['Eligibility_Percentage'] = df.apply(lambda row: calculate_scholarship_eligibility(row['CGPA'], row['Publications'], row['IELTS'], row['GRE']), axis=1)
# Display the results
print("University Scholarship Eligibility and Granted:")
print(df[['CGPA', 'Publications', 'IELTS', 'GRE', 'Eligibility_Percentage']])
```

Output: