## Ghulam Ishaq Khan Institute of Engineering Sciences and Technology
## Department of Computer Science

### Course Information

**Course Code:** CS 351L
**Course Title:** Artificial Intelligence Lab
**Instructor:** Mr. Usama Arshad, PhD CS
**Program:** BS Cybersecurity
**Semester:** 5th
**Reference for Lab Resources:**
[CS 351L - AI Lab GitHub Repository]
(https://github.com/usamajanjua9/CS-351L---AI-Lab-)

### Lab Task Details

**Lab Task:** 01

**Lab Title:** Introduction to Python and AI Development Environment

**Assigned Date:** 4th September 2024

**Submission Deadline:** 10th September 2024

**Task Type:** Individual

### Submission Instructions

- Make a public repository on GitHub with following name:
  CS 351L - AI Lab GitHub Repository_Your_reg_no.

- Submit each completed lab task on repository and share the link to my email with screenshots of output.
  usama.arshad@giki.edu.pk
- File Naming Convention: [YourName]_CS351L_Lab01.ipynb

**Late Submissions:** Will incur a deduction of marks unless approved in advance by the instructor.

## Task Overview

In this lab task, you will extend the Number Guessing Game by implementing it using different search algorithms. You are required to implement the following versions:

1. **Non-AI Version:** Player vs Computer (**already provided**).
2. **AI Version with Binary Search:** Computer vs Player (**as already provided**).
3. **BFS Version:** Implement the Number Guessing Game where the AI uses Breadth-First Search (BFS) to guess the number.
4. **DFS Version:** Implement the Number Guessing Game where the AI uses Depth-First Search (DFS) to guess the number.
5. **Your Own Algorithm:** Implement the Number Guessing Game using an algorithm of your choice. You can choose from algorithms like Simulated Annealing, Genetic Algorithm, or any other search strategy. Explain your choice in the code comments.

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**Code Structure and Submission**

- Your code should be modular and well-commented, explaining how each algorithm is being used to guess the number.
- Clearly indicate which part corresponds to BFS, DFS, and your chosen algorithm.
- Include print statements to show the number of attempts it takes for each algorithm to guess the correct number.

----------*to err is human*----------