IIT Guwahati

EndSem Examination

CS594 – Python Programming Lab

November 21, 2022 TIME ALLOWED: 2.5 hr

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1. This examination paper contains **TWO** questions
2. Answer all questions.
3. The marks for each question are indicated at the beginning of each question.
4. For Question 2, there is a file provided by the name **input.txt**. Evaluation would be done on the basis of that file only.

Question 1. (2 marks)

(i) Given an m x n integer matrix grid, where you can move from a cell to any adjacent cell in all 4 directions - up, down, left, right. Return the number of strictly increasing paths in the grid such that you can start from any cell and end at any cell.

```
Input 1: [[1,1],[3,4]]
Output 1: 8
Explanation: The strictly increasing paths are:
->Paths with length 1: [1], [1], [3], [4].
->Paths with length 2: [1 -> 3], [1 -> 4], [3 -> 4].
->Paths with length 3: [1 -> 3 -> 4].
->The total number of paths is 4 + 3 + 1 = 8.

Input 2: [[1,1,3,4],[3,4,3,2],[3,4,3,2]]
Output 2: 27

Input 3: [[1],[2]]
Output 3: 3
```

Question 2. (4 marks)

Define a class **Batsman** with the following details:
Attributes: PUBLIC

- String type attribute to store the name of the batsman
- Integer type attribute to store the runs scored
- String type attribute to store the name of the bowler who took the batsman's wicket

- Integer type attribute to store the no of balls faced

Methods: PUBLIC

- `ComputeRuns()` - Calculates the run scored by the batsman
- `ComputeBallsFaced()` - Computes the no of deliveries faced
- `FindWicketTaker()` - Find the name of wicket taker. *Indicate with None if batsman is not out*

`Task 1 [1 mark]`

Read data from the file given and print the names of distinct batsman

`Task 2 [3 marks]`

Populate the list of type **Batsman** by implementing the following methods

- Implement ComputeRuns()
- Implement ComputeBallsFaced()
- Implement FindWicketTaker()

Print the records in the following format: **Sample**

```
Batsman_Name Runs_Scored Balls_Faced Wicket_Taker

Kohli 100 55 Anderson
```

END OF PAPER