BAHRIA UNIVERSITY, Karachi Campus)

Department of Software Engineering

ASSIGNMENT # 02 – Fall 2023

Designing Grammar and Implementing Regular Expression

CLO 02

Course Title:	**Software Construction**	Course Code:	**SEC-311**
Class:	**BSE – 5(A)**	Shift:	**Morning**
Course Instructor:	**Dr. Salahuddin Shaikh**	Date:	**11th Nov 2022**
Due Date:	**20th Nov 2023**	Max. Marks:	**5.0 Marks**

Question No. 1: **[CLO#02, 5.0 marks]**

You are tasked with creating a text processing component for a social media platform. The component needs to analyze and tag user posts for specific keywords and mentions. Your goal is to design grammar and implement a regular expression to identify and tag these elements.

1. **Design a Grammar:**
   Create a grammar that defines the structure of a user post on the social media platform. Your grammar should account for the following elements:

   - Text content

   - Mentions (e.g., @username)

   - Keywords (e.g., #keyword)

   - Emoticons (e.g., :) or :D)

2. **Regular Expression Implementation:**
   Using the grammar you designed, implement a regular expression in any language that can identify, and extract mentions and keywords from a user post. Your regular expression should:

   - Match mentions starting with "@" followed by a username (e.g., @john_doe).

- Match keywords starting with "#" followed by a keyword (e.g., #technology).

3. **Testing and Tagging:**
   Write code that uses your regular expression to identify mentions and keywords in a sample user post. For each mention and keyword found, tag them appropriately using square brackets. For example, if the post is "Great article by @john_doe on #technology!", your code should tag it as "Great article by [**@john_doe**] on [**#technology**]!"

4. **Validation and Efficiency:**
   Discuss how you can validate the accuracy of your regular expression and what steps you would take to ensure it performs efficiently, especially on many user posts.
   You must create grammar, implement a regular expression, and provide code in any language to process and tag user posts. Additionally, they need to consider validation and efficiency in their solution.