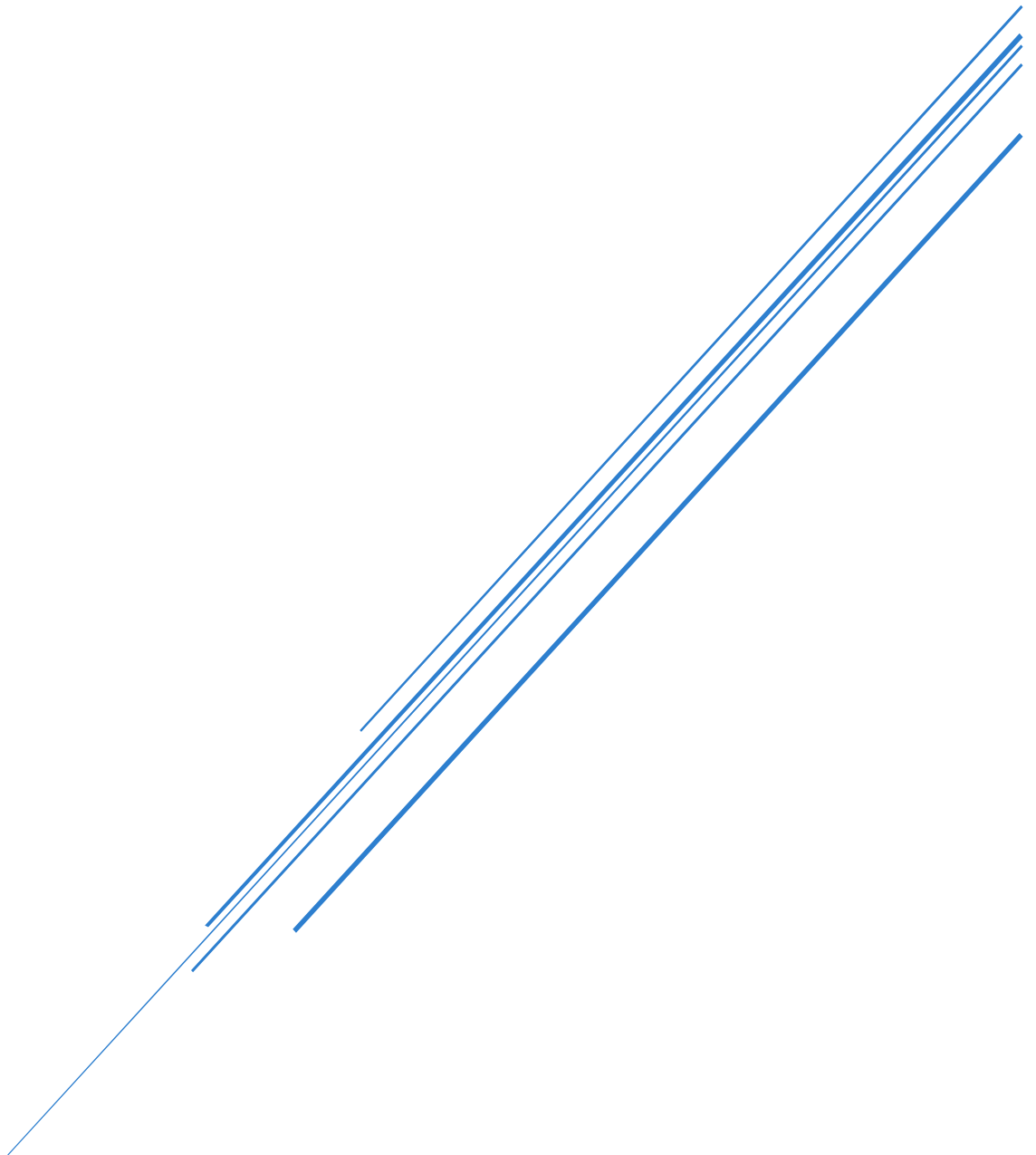# INSY7314

ICE TASK 1

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Section A

Q.1) The main purpose of CAPTCHA is that it determines what user is real and ewhat is a bot.

Q.2) CAPTCHA uses simple puzzles that is easy for humans to solve but is difficult for bots to complete.

Q.3) **Types:**

- **Text CAPTCHA:** users are required to type in the displayed words.
- **Math CAPTCHA:** users are required to solve basic math problems.
- **Audio CAPTCHA:** users are required to listen to phrases and speak the phrases back.
- **Image CAPTCHA:** users are required to select images that meet specific criteria.

Q.4)

- **Accessibility Issues:** those with disabilities may struggle with the CAPTCHA.
- **User Frustration:** users may get irritated by continuously having to do the "puzzles" just to sign up.

Q.5) No, while CAPTCHA can help block any automated submissions it isn't entirely safe from bots as the more advanced ones can easily bypass.

Section B

Q.1) This code is vulnerable to SQL injection.

Q.2) The user inputted their username as "admin" therefore this input is directly inserted into the SQL query without any parameterization, The query will then become:

SELECT * FROM users WHERE username = 'admin' --' AND password = '(anything)'

The "--" is a comment syntax which causes the rest of the query to be ignored therefore essentially the query is:

SELECT * FROM users WHERE username = 'admin'

The password check is therefore bypass.

Q.3) Attackers can easily have unauthorized access by logging in as admin without even needing to know the password as its check is commented out.

Q.4)

- **Use Prepared Statements:** Rather than plugging user input straight into your SQL query, use prepared statements. They let you safely insert user data without risking SQL injection attacks.
- **Check and Clean User Input:** While it's not a complete fix by itself, always check and clean the information users enter. This helps catch and block any suspicious or harmful characters before they cause trouble.