**National University of Computer & Emerging Sciences, Karachi**

**Software Engineering Department**

**Quiz 01**

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| **Course Code: SE-1001** | **Course: Introduction to Software Engineering** |
| **Instructor: Iqra Fahad** | **Section: BSE – 2A** |
| **Semester: Spring 2024** | **Total Points: 10** |

**Question 01 [5]**

A software development company is looking to improve their software development processes and has hired you as a consultant. They currently use a Waterfall model for software development and are looking to adopt Agile methodologies. Enlist four potential benefits and four challenges faced during this transition.

**Benefits of transitioning from Waterfall to Agile:**

**Increased adaptability:** Agile methodologies allow for changes in requirements and project scope to be easily accommodated throughout the development process.

**Faster delivery:** Agile methodologies prioritize working software over extensive documentation, which often leads to faster delivery times.

**Improved collaboration and communication:** Agile methodologies place a strong emphasis on regular and open communication between team members, stakeholders, and customers.

**Enhanced customer satisfaction:** Agile methodologies allow for regular feedback and collaboration with customers, which leads to a better understanding of their needs and a higher level of customer satisfaction.

**Challenges faced during the transition:**

**Culture change:** The shift from a traditional Waterfall approach to an Agile methodology requires a change in the company culture and mindset, which can be difficult for some employees to adopt.

**Training and skill development:** The transition to Agile methodologies often requires training and skill development for team members, which can be time-consuming and costly.

**Resistance to change:** Some employees may resist the change to Agile methodologies, either because they are comfortable with the Waterfall model or because they do not believe in the benefits of Agile.

**Integration with existing systems and processes:** Integrating Agile methodologies into the existing systems and processes of a company can be a challenge, especially if the company has a large and complex legacy codebase.

**Question 02 [5]**

How does Scrum handle team collaboration and communication as compare to XP? Differentiate and elaborate with the help of suitable example(s).

**Scrum:**

* **People, Not Processes**:
  + Prioritizes autonomy and self-organization of teams.
  + Values individuals and interactions.
  + Example: The Daily Standup fosters collaboration and support among team members.
* **Maintaining Simplicity:**
  + Focuses on delivering value incrementally and iteratively.
  + Ensures high-priority features are delivered first, avoiding unnecessary complexity.
  + Example: Product backlog prioritization ensures high-value items are addressed early.

**Extreme Programming (XP):**

* **People, Not Processes:**
  + Emphasizes close collaboration and shared responsibility within integrated teams.
  + Values direct interaction, knowledge sharing, and collective ownership.
  + Example: Pair programming promotes direct interaction and collective code ownership.
* **Maintaining Simplicity:**
  + Advocates for lightweight processes, minimal documentation, and continuous feedback loops.
  + Ensures code remains simple, focused, and easily maintainable.
  + Example: Test-Driven Development ensures code quality and simplicity by writing tests before code.