National University of Computer & Emerging Sciences, Karachi
Spring -2023 School of Computing
MidTerm 1
28th February 2023, 8:30 am – 9:30 am

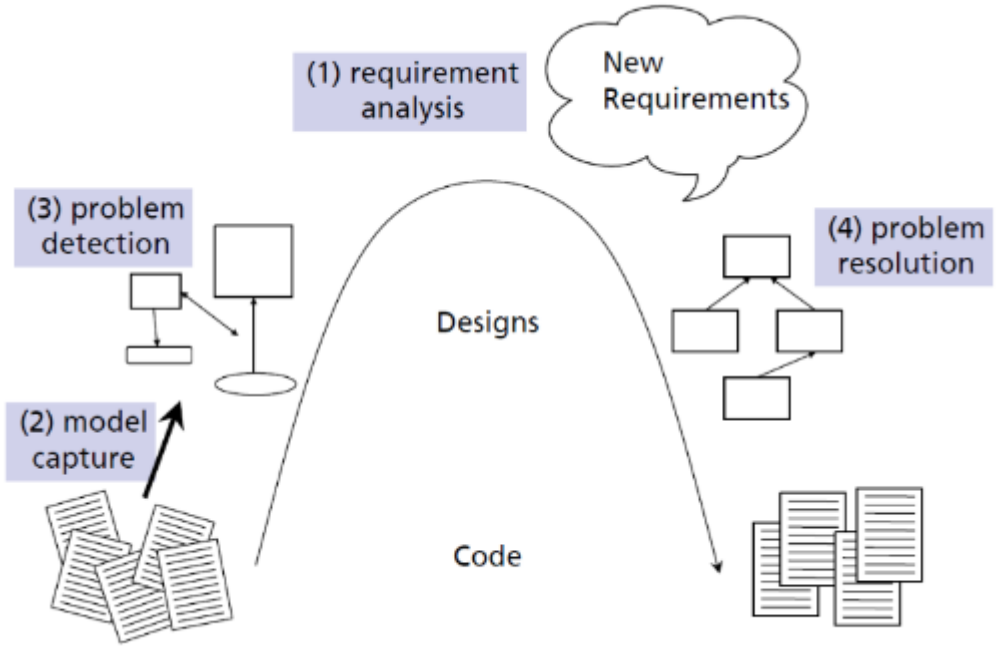
Course Code: SE4001	**Course Name: Software Re-Engineering**
Instructor Name / Names: Dr. Abdul Aziz	
Student Roll No:	**Section No:**

Instructions:

- Return the question paper.
- Read each question completely before answering it. There are **3 questions and 1 page**
- In case of any ambiguity, you may make assumption. But your assumption should not contradict any statement in the question paper.
- All the answers must be solved according to the sequence given in the question paper.
- This paper is subjective

Time: 60 minutes. **Max Marks**: 40 points

Question 1: Define and elaborate each phase of the software Re-Engineering life cycle? **(10)**



Question 2: Short Answer Questions. **(15)**

a) Discuss when to go for a replace or repair decision.
The student should mention two major factors that is Effort and Cost. Another element is the expertise in both the domain and tool related to the existing system.

b) Discuss the difference between a GreenField and BrownField software development.
Any three differences:

S. No.	Aspect	Greenfield	Brownfield
1	Project direction	Vague	Clear
2	Development effort	Comparatively more since everything needs to be built from scratch	Comparatively less since basic foundation is already built
3	Dependency on older systems	No	Substantial
4	Development time	Comparatively more	Comparatively less
5	Degree of risk	Comparatively higher	Comparatively lower
6	Re-engineering required	No	Likely
7	Costs	Can be costly if there is no clear direction	Can be costly due to the presence of legacy code

c) Why re-engineering of a system is require?
Mainly because the software becomes inefficient with time.

d) Discuss the three elements of Jacobson's equation.
Reverse Engg, delta and Forward Engg

e) Differentiate between rehosting, rephrasing and translation of a program.
Rehosting: reengineering of source code without addition or reduction of features.
Rephrasing: (normalization, optimization, refactoring, and renovation)
Translation: transformed into a program in a different language

Question 3: Case Study. **(15)**

The three main functions which contributed to the Airbnb product development process are:
1) designers 2) engineers, and 3) researchers. The researchers only jumping into the process at defined time. Those defined times weren't serving the end goal of delivering a great product on time.

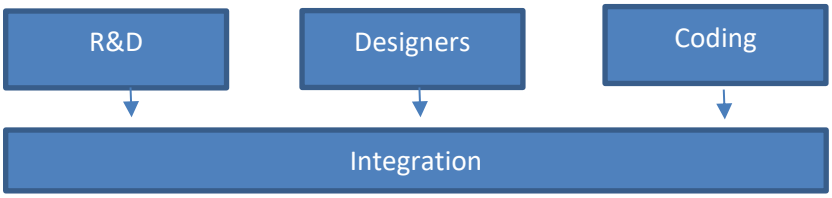
Designers had to wait on engineers to write code before a mock-up could be visualized on screen. In turn, engineers had to wait on researchers to validate product ideas, only to find at the very end that project assumptions were off-base. This was less so a failure of bulldozing researchers, needy designers or overly-coveted engineers. It was a process failure.

"This was a strong signal to me [of] a failure of process and the need for more deep and consistent engagement between ... teams," said Head of Research at Airbnb.

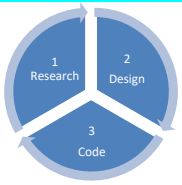
Required:
You are required to draw a possible solution to this problem based on re-engineering principles. You may take assumptions but they should not be contradictory in nature.

ANSWER

Student need to identify any one of the following:
Solution #1: Treat Geographically Dispersed Resources as Though They Were Centralized



Solution #2: Organize Around Outcomes, Not Tasks



Solution #3: Link Parallel Activities Instead of Integrating Their Results (Inverse of 1)