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Class: BS-SE, A, 4th semester

Subject: Software Engineering

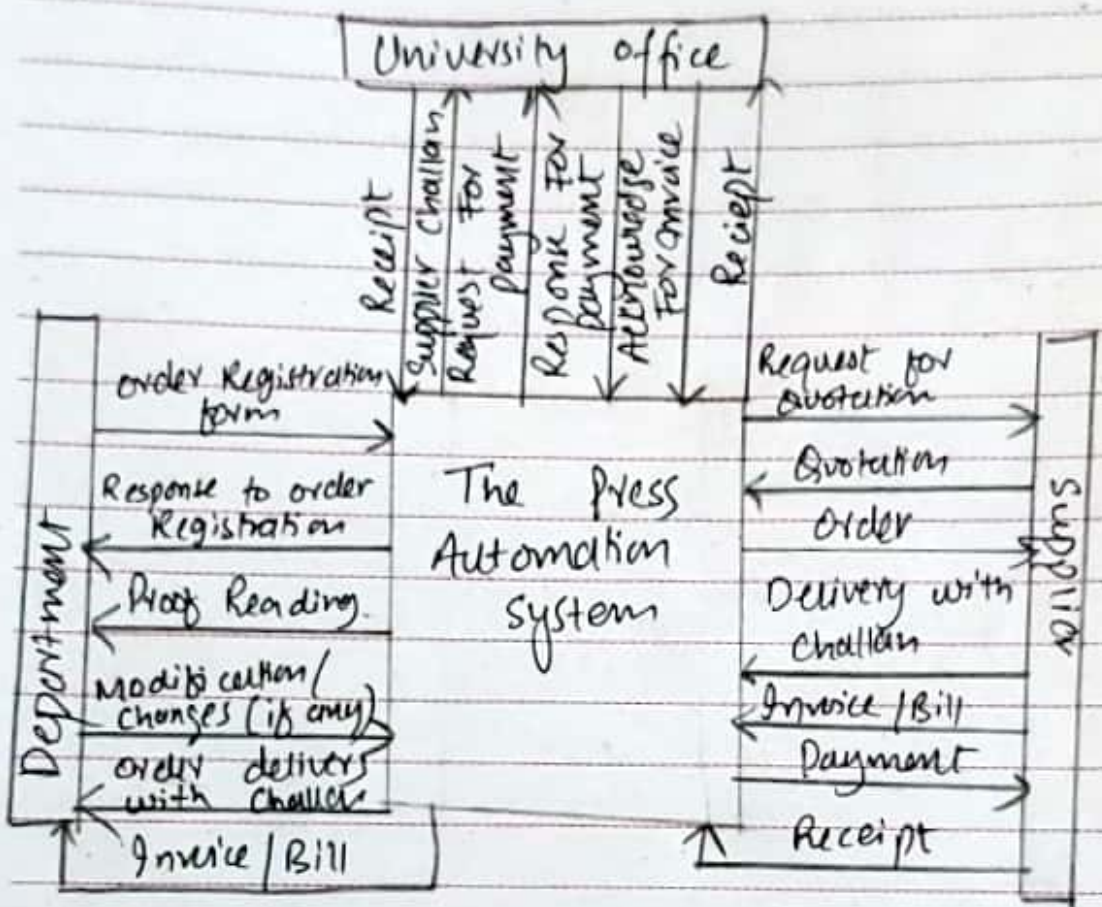
Teacher: Engr. Ghassan

Date: 22nd June, 2020

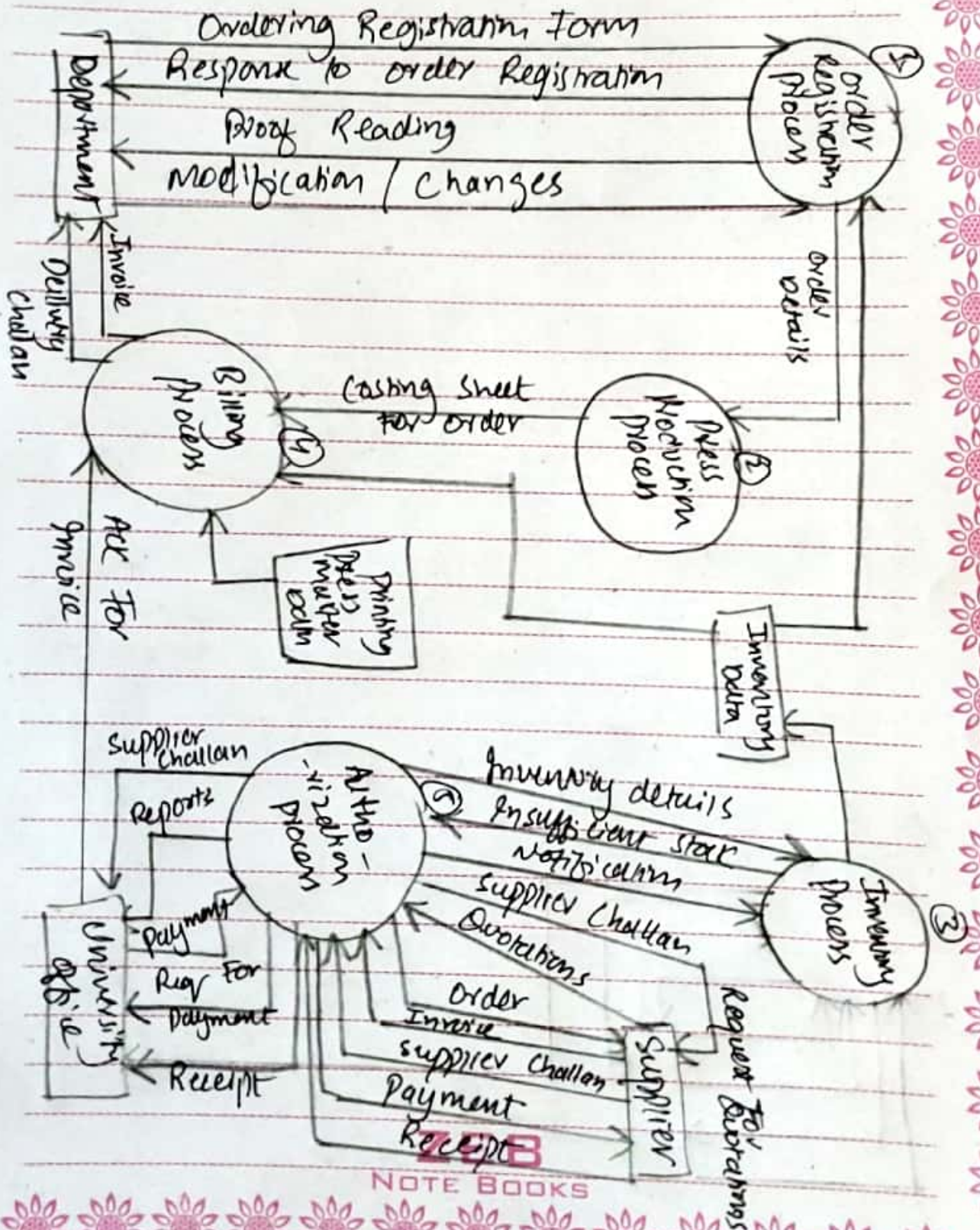
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Question No 1

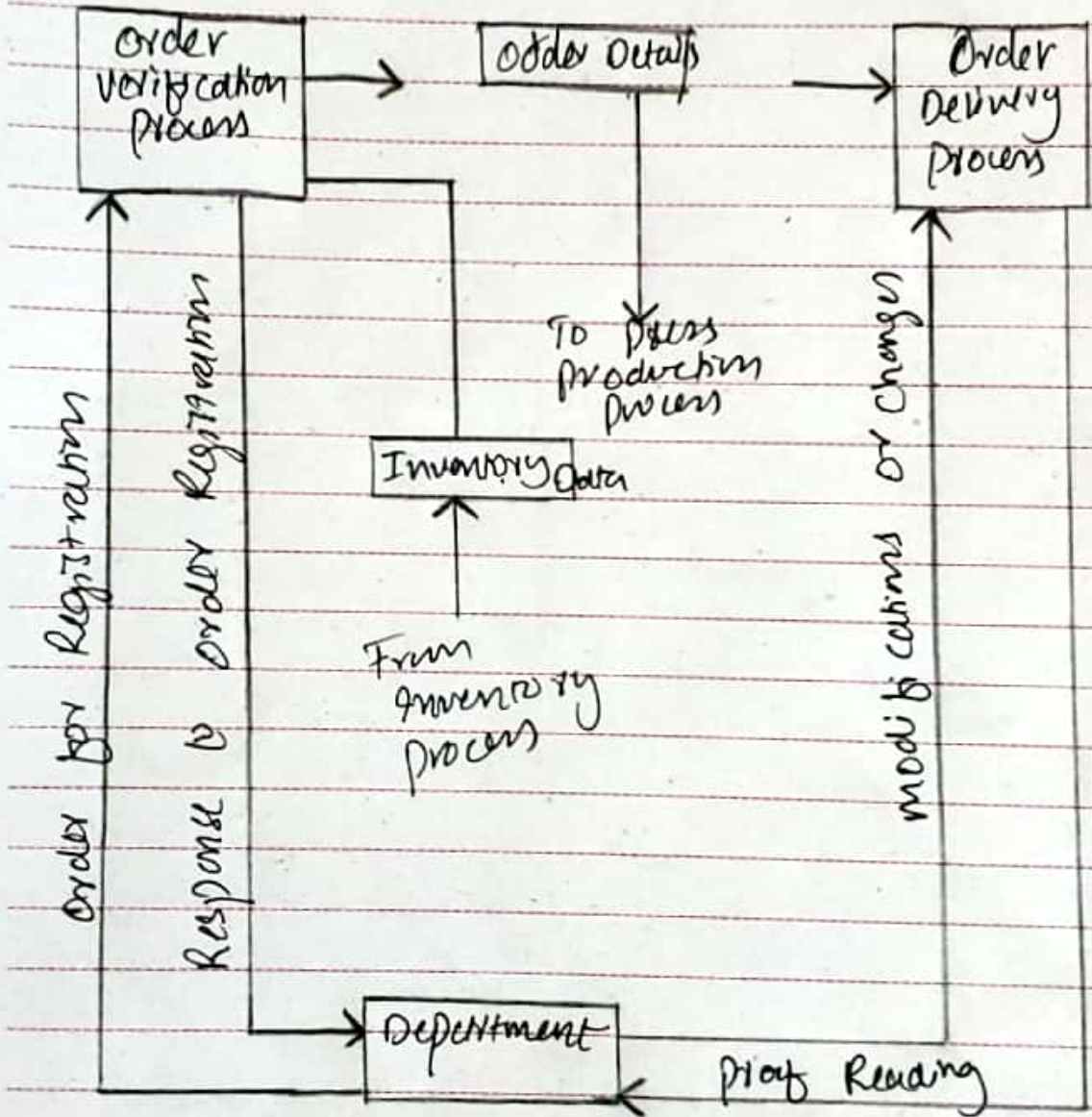
Q1 Context Diagram:



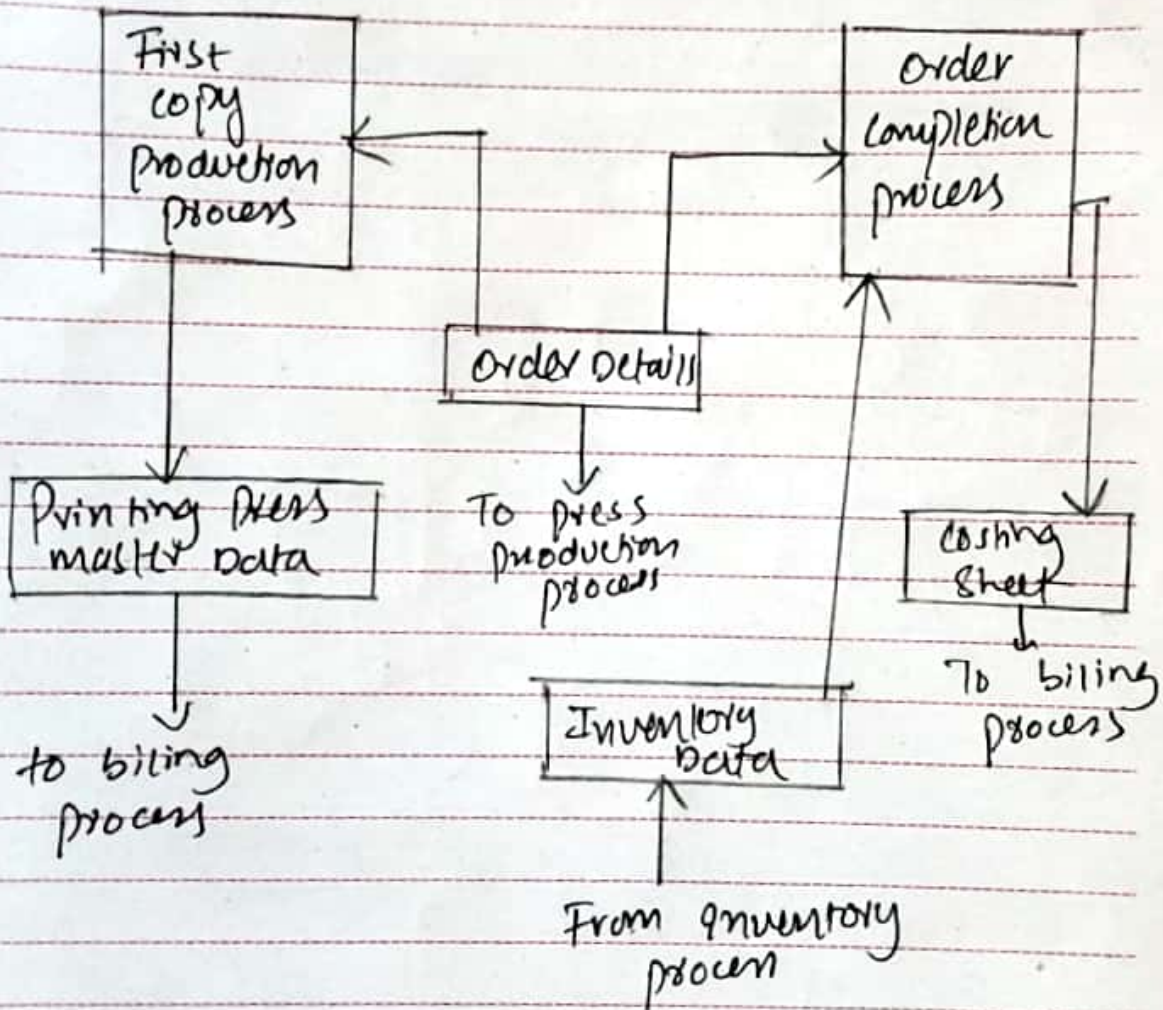
Q 1-2 Level 1- Data Flow Diagram:



Q1-3 Level 2 DFD For the
a) Order Registration Process

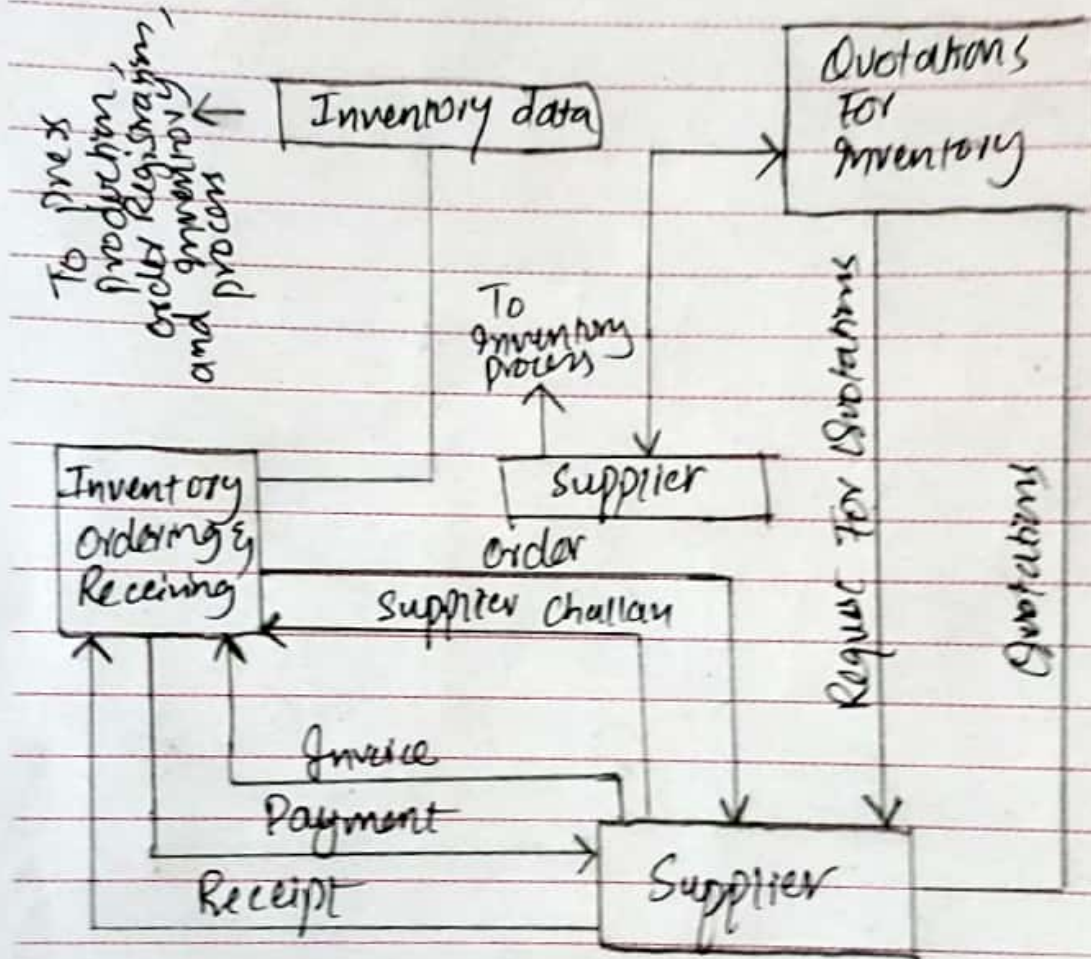


⑤ Level 2 DFD For Press production process:

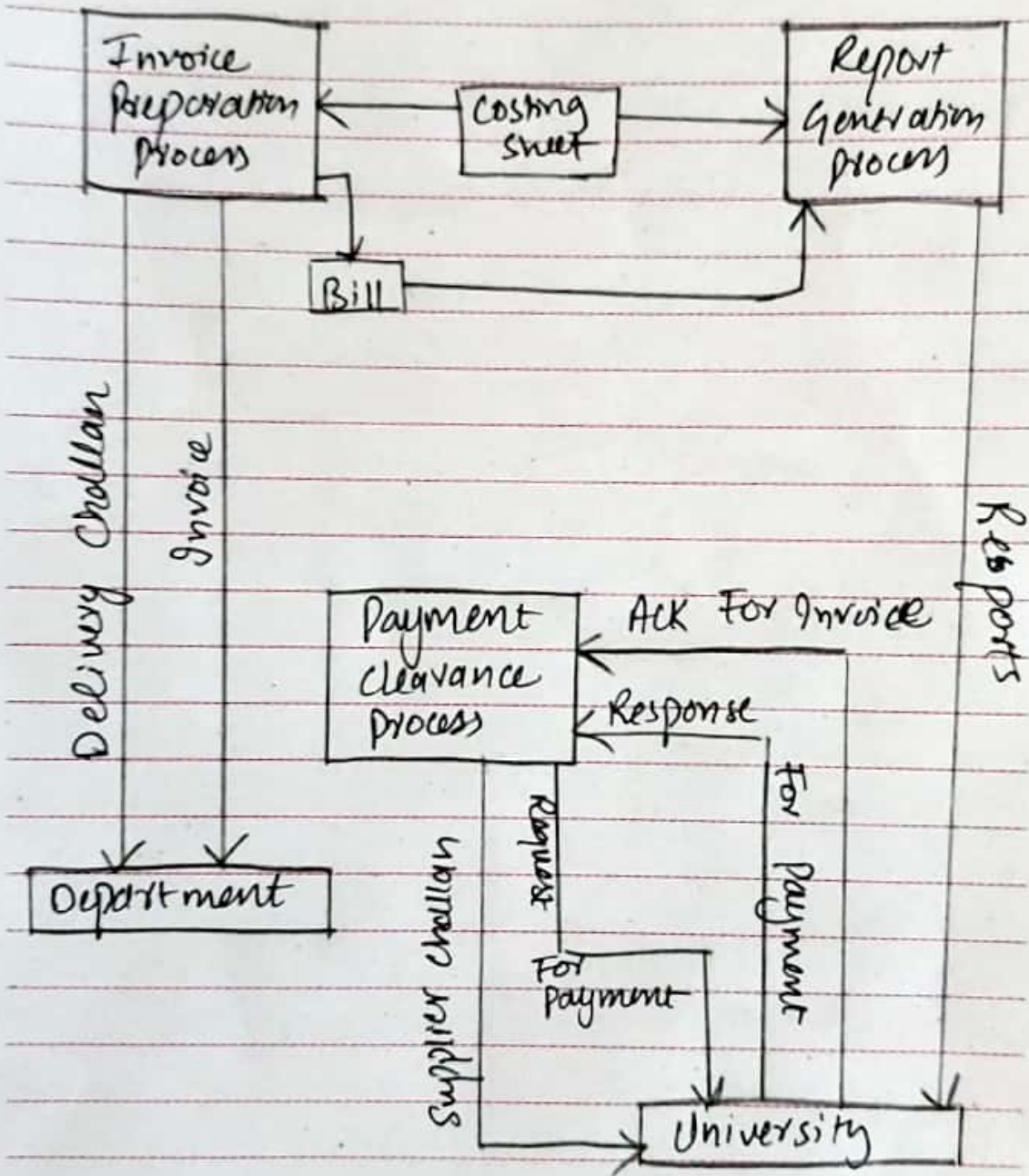


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(C) Level 2 DFD For Inventory Process.



(d) Level 2 DFD for Billing Process



Question no 2:

2.1 Explain why testing can only detect the presence of errors, not their absence?

Answer:

The following are the main reasons due to which testing can only detect the presence of errors, not their absence.

- 1) The goal of a software testing is to observe if the software behavior meet requirements that they are expected to meet.
- 2) Testing demonstrates to the developer that the software fulfills its requirements and it is a way to find out if behaves in an incorrect, undesirable or different form from the specifications.

Q:2-2: Define the following terms

1) Unit testing:

Unit testing is the process of testing individual components in isolation. It is a defect testing process.

It is always preferred that unit testing should be automated so that tests are checked and run without manual intervention.

There are two types of unit testing.

i) The first of these should reflect normal operations of a program and should show that the component work as expected.

ii) The other kind of test case should be based on testing experience of where common problems arise.

Date: _____

2) System Testing:

System testing during development involves integrating components to create a version of the system and then testing the integrated system. The purpose of a system test is to evaluate the end to end system specifications. Often, the software is only one element of a larger computer-based system.

3) Black-Box testing:

Black box testing also known as behavioural testing is a method of software testing that examines the functionality of an application based on the specifications. also known as specifications based testing. These type of testing is done during software testing life cycle.

4. White box testing:

A testing technique that examines the program structure and derives test data from the program logic/code.

In white box testing an internal perspective of the system, as well as programming skills, are used to design test cases.

QUESTION #03:

3.1 Briefly describe the three main types of software maintenance. Why is it sometimes difficult to distinguish between them?

Answer:

The three types of software maintenance are,

1- Corrective:

Corrective maintenance of

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NOTE BOOKS

Date: _____

a software product is necessary to Rectify the bugs observed while the system is in use.

2- Adaptive:

A software product might need maintenance when the customers need the product to run on new platforms, on new operating systems, or when they need the product to interface with new hardware or software.

3- Perfective:

A software product needs maintenance to support the new features that users want it to support, to change different functionalities of the system according to customer demands, or to enhance the performance of the system.

⇒ It is sometimes difficult to distinguish between the different types of maintenance because faults that arise with a system can maybe have overlapping

3.2 What are the principal factors that affect the costs of system re-engineering? Also briefly explain the Re-engineering process with the help of diagram.

Answer:

Factors Affecting cost of System Re-Engineering:

(i) The Quality of software to Re-Engineered.

The lower of the quality of the software and its associated documentation (if any), the higher Re-Engineering costs.

(ii) The tool support available for Re-Engineering:

The use of CASE tools to automate most of the program changes is normally cost effective to re-Engineer a software.

Date: _____

(iii) The extent of data conversion Required:

If Re-Engineering Requires large volumes of data to be converted, this significantly increases the process cost.

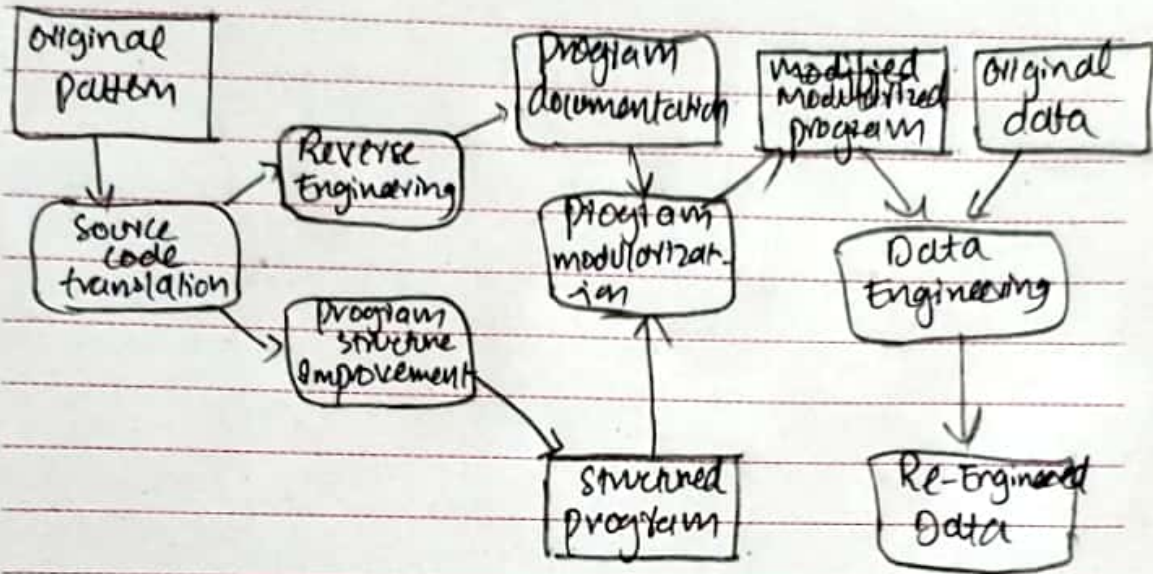
(iv) The Availability of Expert Staff:

If the staff responsible for maintaining the system can't be involved in the re-Engineering process, this will increase the costs. System re-Engineers will have to spend a great deal of time understanding the system.

Date: _____

Page 14

Diagram: (The Re-Engineering Process)



Explanation:

The input to the process is a legacy program and the output is the modularized version of the same program.

The activities in this Re-Engineering process are,

Source code, Reverse Engineering, Program Structure Improvement

Date _____
Program modularization, Delta-R-eng-
-neering

→ source code translation is the translation of one programming language into some other.

→ The objective of Reverse Engineering is to derive, the design and specification of a system from its source code.

→ Improvement, where program Restructuring modifies source code and/or data in an ~~etc~~ effort to make it easier for future changes.

→ Program structure improvement focuses on design details of individual modules - and on local data structures defined within modules.

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