

Instructor: Mr. Ghassan Hassan.

Name: Zaimin Shah

ID: 15277

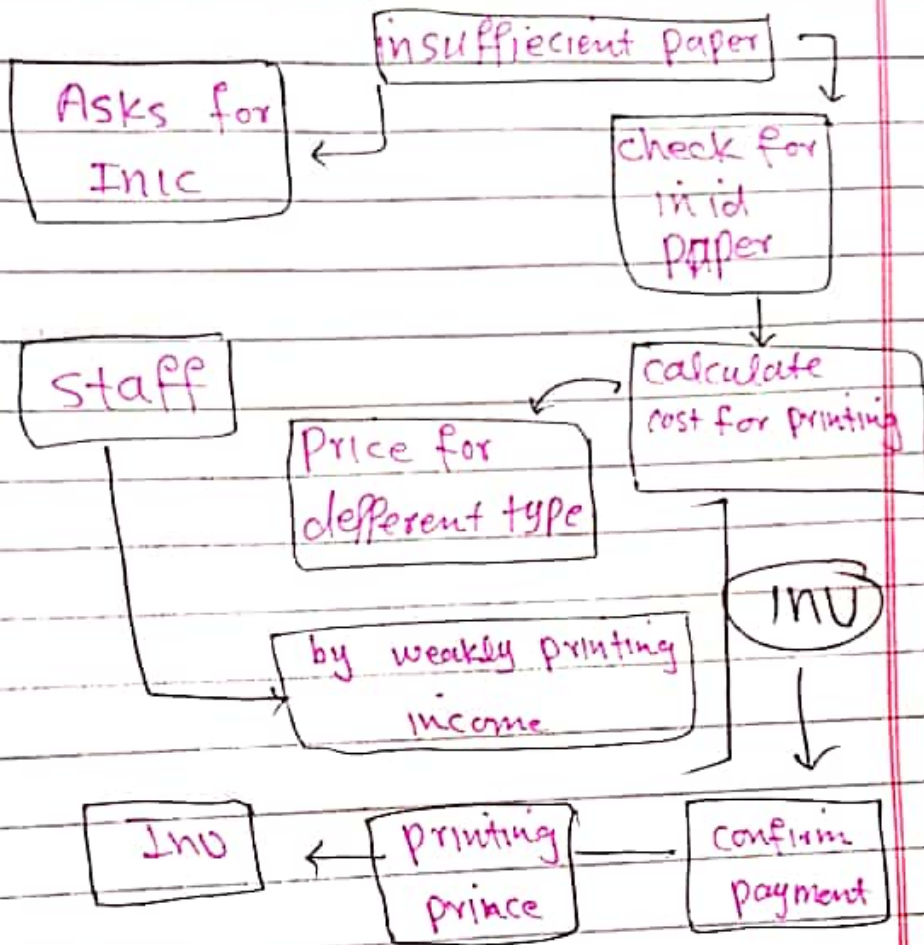
Dept: BS (S.E)

Section: "B"

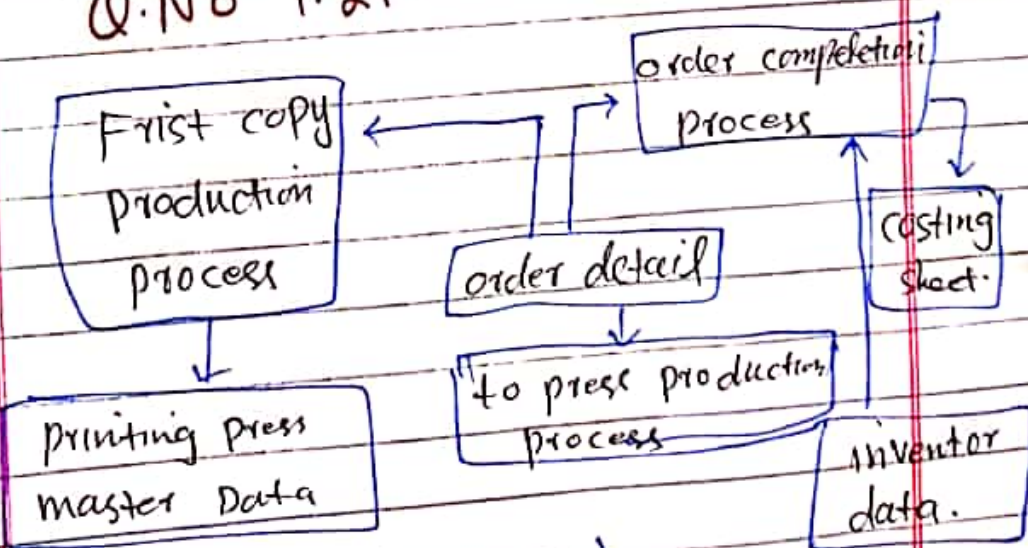
Assignment: S.E

Date: 22/06/2020

### Question # 01.1.

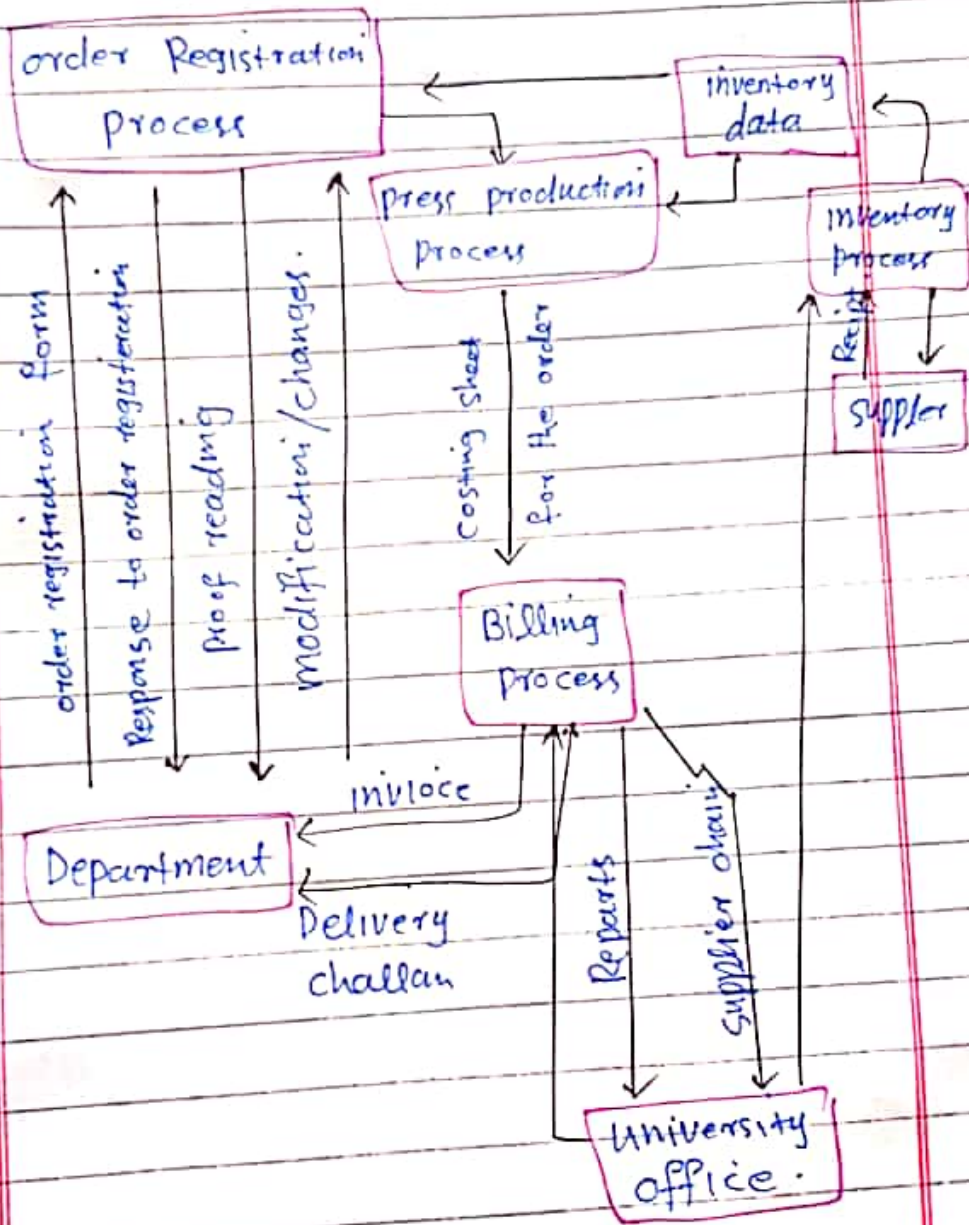


### Q.No 1.2:-



(to billing process)

Q.No 1.3 :



## Question # 02.

Q No: 2.1:.

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

## ANSWER # 02.1.

Testing can detect only the presence of errors, NOT their absence the main goal of the testing is:

[ To observe the behavior of the particular software and to check whether it meet its requirement expectation or not. ]

Testing is a part of broader process of software verification and validation. It consists of a set of activities, where the testers try to make the software behave anomalous in order to detect or anomaly to be later fix. Testing cannot demonstrate the faults other than specified in every circumstance. It is always possible that a test

Have overlooked could discover further problem with the system. Assume that exhaustive testing of a program, where every possible valid input is checked, is impossible (true for all but trivial programs). Test cases either do not reveal a fault in the program or reveal a program fault. If they reveal a program fault then they demonstrate the presence of error. If they do not reveal a fault, however, this simply means that they have executed a code sequence that - for the inputs chosen - is not faulty. The next test of the same code sequence - with different inputs - could reveal a fault.

Question No 2.2:

Define the following terms:

ANS No 2.2:-

1) Unit Testing:-

- The most 'micro' scale of testing
- Tests done on particular functions or code modules.

→ Requires knowledge of the internal programme design and code.

→ Done by programmers (Not by tester)

**Objectives :**

- ⊙ To test the function of a program or unit of code such as a program or module.
- ⊙ To test internal logic.
- ⊙ To verify internal design.
- ⊙ To test path & conditions coverage.
- ⊙ To test exception conditions & error handling.

**When :** → After modules are coded.

**Input :**

- ⊙ Internal Application Design.
- ⊙ Master test Plan.
- ⊙ Unit Test Plan.

**Output :** Unit test Report.

⊙ **Who :** Developer.

**Methods :** white box testing techniques

**Tools :**

Debug

Re-structure

code Analyzers.

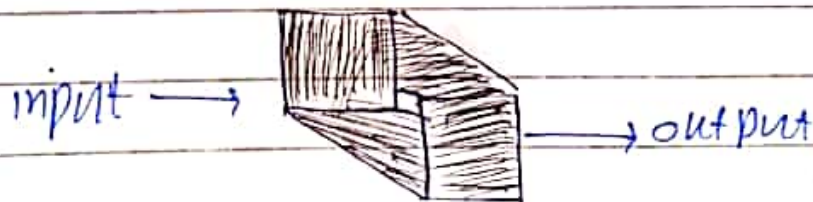
Path/Statement coverage <sup>tools</sup> code

Education : Testing Methodology.  
effective use of tools.

## 2) System testing :-

System testing is a level of testing that validates the complete and fully integrated software product. The purpose of a system test is to evaluate the end-to-end system specifications. Usually the software is only one element of a larger computer-based system.

## 3) Black box testing :-



black box testing.

black box testing also known as behavioral Testing. is a software testing method in which the internal structure / design / implementation of the item being tested is not known to the tester. these tests can be functional

or non-functional, though usually functional.

#### 4) White box testing: -

White-box testing is a method of software testing that tests internal structure or workings of an application, as opposed to its functionality. In white-box testing an internal perspective of the system, as well as programming skills, are used to design test cases.



### Question # 03.

Q/NO 3.1: Briefly describe the three types of software maintenance. Why is it sometimes difficult to distinguish between them?

Ans NO: 3.1. ANS # 03.

The main types of software maintenance are as follow:-

#### 1) Fault repairs :-

Coding errors are usually relatively cheap to correct, design errors are more expensive as they may involve rewriting several programme components. Requirements errors are the most expensive to repair because of the expensive system redesign which the be necessary.

#### 2) Environmental adaptation:-

This type of maintenance is required when some aspect of the system's environment. such as the hardware, the platform operating system, or other support software changes the application system must be modified to adapt it to cope

with these environment changes.

### 3) Functionality addition :-

This type of maintenance is necessary when the system requirements change in organization response to organizational or business change. The scale of the changes required to the software is often much greater than for the other types of maintenance.

→ Why is it difficult to differentiate between the types of maintenance:-

In practice, there is not a clear-cut distinction between these types of maintenance, when the system adapt to new environment, then add functionality to take advantage of new environmental features. Software faults are often exposed because users use the system in unanticipated ways. These types of maintenance are ~~very~~ recognised but a different person sometimes gives them different names.

Corrective maintenance is universally

Used to refer to maintenance for fault repair.

### Adaptive Maintenance :-

Sometimes means adapting to new environment and sometimes means adapting the software to new require.

### Perfective Maintenance :-

Sometimes means perfecting the software by implementing new requirements, in other cases it means maintaining the functionality of the system but improving its structure and performance.

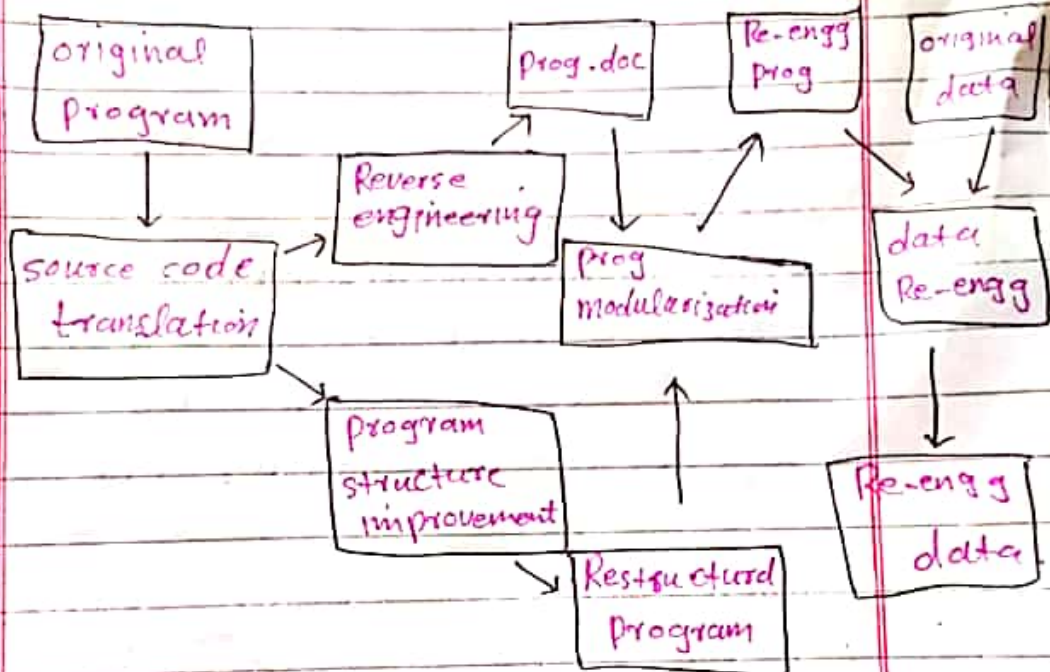
### Question # 3.2.

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.

- source code translation.
- convert code to a new language.
- Reverse engineering
- Analyse the program to understand it.
- Program structure improvement.
- Restructure automatically for under

standability.

- Program modularisation.
- ⊙ Reorganise the program structure
- Data Reengineering
- ⊙ Clean-up and restructure system data.



### Re-engineering costs: factors:-

- The quality of the software to be reengineered.
- The total support available for re-engineering.
- The extend of the data conversion which is required.
- The availability of expert staff for re-engineering.