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## Software Engineering

Q-1 Assume that you are assigned the responsibility of (OAS) Online Admission System for a University.  
(a) which SDLC paradigm will be selected.

Ans: The spiral model seems as an ideal choice here. The spiral model is similar to the incremental development for a system, with more emphasis placed on risk analysis. The spiral model has 4 phases: Planning, Design, Construct and Evaluation. These ~~step~~ steps can be generalised as :-

- The new system requirements are defined as much as detail as possible. This ~~is~~ usually involves interviewing a number of users representing all the external or internal users.
- A preliminary design is created for the new system.
- A first prototype of the new system is constructed from the preliminary design.
- ~~The~~ A second prototype is evolved by a fourfold procedure.
  - Evaluating the first prototype in terms of strength, weakness & risks.
  - Defining Requirements for second prototype.
  - Planning & designing a second prototype.
  - Constructing & testing the second prototype.

Strength :

- 1.) Estimates become more realistic as work progresses.
- 2.) More able to cope with the changes.
- 3.) SE start working earlier.

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Weakness:

- Highly customized limiting re-usability
- Applied differently for each application
- Risk of not meeting budget.

(b) List the functional &amp; non-functional Requirements

Ans: Functional Req. defines a function of software system or its component. A function is described as set of inputs, behaviours & outputs.

- 1.) Login Screen
- 2.) Menu selection
- 3.) Admission form
- 4.) Instruction
- 5.) Admission form offline
- 6.) Admission form Status
- 7.) Result
- 8.) Merit list

Non-functional

Performance req. systems can withstand even though many no. of users requested the desired service.

As we are keeping office level server of automated payroll system. And access is given to the only registered users of office who require the services of viewing, updating etc. It can withstand the load. As it is object oriented reusability exists. Requirements by incorporating a robust & proven SQL into system, reliable performance & integrity of data is ensured. There might be a power backup for server system.

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c) Estimate cost

Software Cost Estimation is widely considered to be a weak link in software project management. It requires a significant amount of effort to perform it correctly. Errors in software cost estimation can be attributed to a variety of factors. Various studies in the last decade indicated that 3 out of 4 software projects are not finished on time or within budget or both. Many a times the estimates are forced to match the available time & resources by aggressive leaders. Under Estimating a project can be very damaging it leads to improper project planning - It can also result in understaffing & may result in an overworked & burnt out team. Above all the quality of deliverables may be directly affected due to insufficient testing and QA missed Dead lines caused loss of credibility & goodwill.

(d) Estimate effort

Estimating the process of forecasting or approx. the time & cost of completing project deliverables. The task of balancing the expectations of stakeholders & the need for control while the project is implemented. The 2 primary elements in cost estimation are time & resources. Your estimation needs to take both into account. There are more questions you need to answer in order to best estimate. The more accurate & thorough your answers to these questions the better your answers.

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e) Develop SRS using IEEE format

1.1. Purpose for this SRS document contains the complete software requirements for the Student Admission System & describe the design decisions, architectural design & detailed designs.

1.2 Scope SAS used to replace old paper work system. SAS is to build upon existing web based project marketing system PUMS in order to implement the project marketing process & allocating supervisor / ideas to students. This will increase efficiency.

1.3. Definitions, acronyms, & abbreviations SAS for PUMS project units Management System ~~SMS~~ SUMS & Units management System J2EE Java 2 Platform Enterprise Edition JSP Java Server Page UP link VOP Student Portal facility OS

1.4. References Brigg s Briggs J (2005) SUMS documentation Retrieved 3rd Dec 2005 for <http://www.tech.port.ac.uk/staffweb/briggs/jinap/SUMS/IEE1998>

1.5 Overview → This document has been prepared in accordance with the IEEE std 830-1998, IEEE Recommend the practice for SRS.

2. Overall description. This SRS of SRS describes all general factors of the product & its requirements.

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2.1 Product Perspective for:

2.1.1 System Interface The SUMS is the new updated version of PUMS - the web based project unit management system. It is intended to implement all PUMS features for the administration of student projects. The SUMS is using J2EE platform of Struts Model 2. All components follow Model-view Controller pattern. SUMS import Jstpp packages that can either connecting to a Oracle database or MySQL database through Database Utility components.

2.1.2 User Interfaces All pages of the system are following a consistent name & clear structure. The occurrence of errors should be minimized through the use of checkboxes radio buttons & scroll down in order to reduce the amount of text input from user. JavaScript implement in HTML in order to provide a Data Check before for submission HTML Tables to display information to give a clear structure that easy to understand by user. Error msg should be located besides the error

2.1.3 Hardware Interfaces a server Side. The web application will be hosted on one of the departments for linux servers & connecting to one of school Oracle Database Server. The web server is listening on the web standard port 80

2.1.4 Software interfaces a ~~Server~~ Server Side The UAP already has the required ~~new~~ software to host a Java web app.

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2.2 System functions

2.2.1 Student role → Register, track progress, email verification of code

2.2.2 Admin role  
 → deactivate student account info  
 → form the sending of new pass.  
 → change any of student's details

3. Specific requirements

3.1 Functional req.

3.1.1 User class - This section is for UAF School of Computing student  
 • Registration form  
 • Change detail  
 • Change password  
 • ~~change~~ forgot password

3.1.2 User class - Academic staff all staff can view the details of any student.

3.3 System Attributes

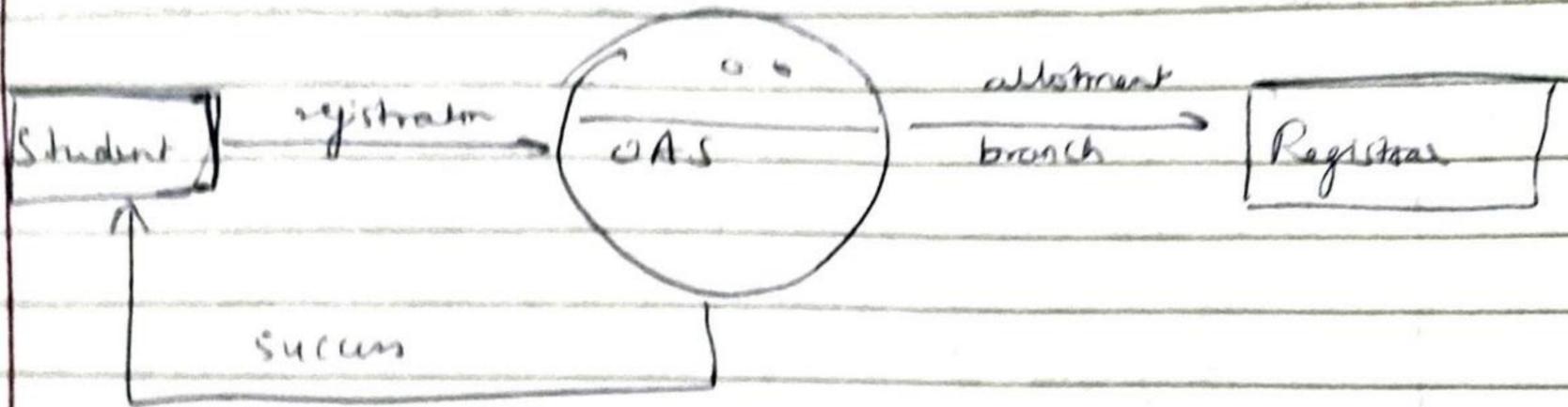
3.3.1 Security → It should be secure

3.3.2 Maintainability

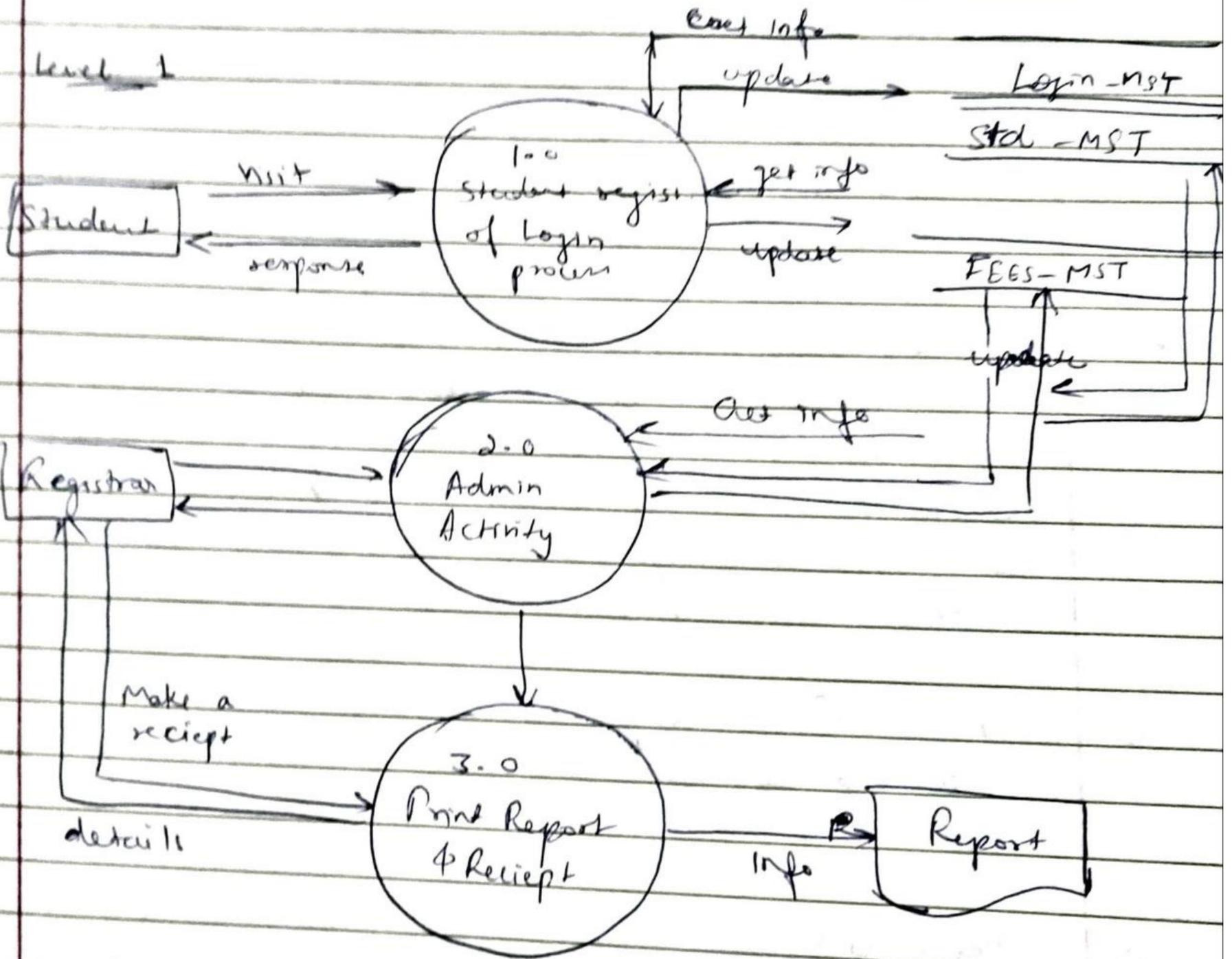
3.3.3 Portability

3.4 Other requirements

DFD level 0



level 1



(f) List queries of whom Reports can be generated

Ans = The module handles all the config. & admin of system.

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Admission admin module has following features:  
The Admin department does a lot of work in the complete admission process.

Enlistment of Admin functions :-

- Grievance management
- Telephone & Email
- Report downloading
- Information Access
- Report Compliance
- Category-wise Admissions
- Gender ratio
- Institute Analysis

A.

Quota Table Management :

Admin can manage the quota table according to rules of regulations of government entity.  
Quota table includes details of total available seats for individual college along with stream, male female & other reservation details.

B.

Student Data Management

All the applicable data is available on single click

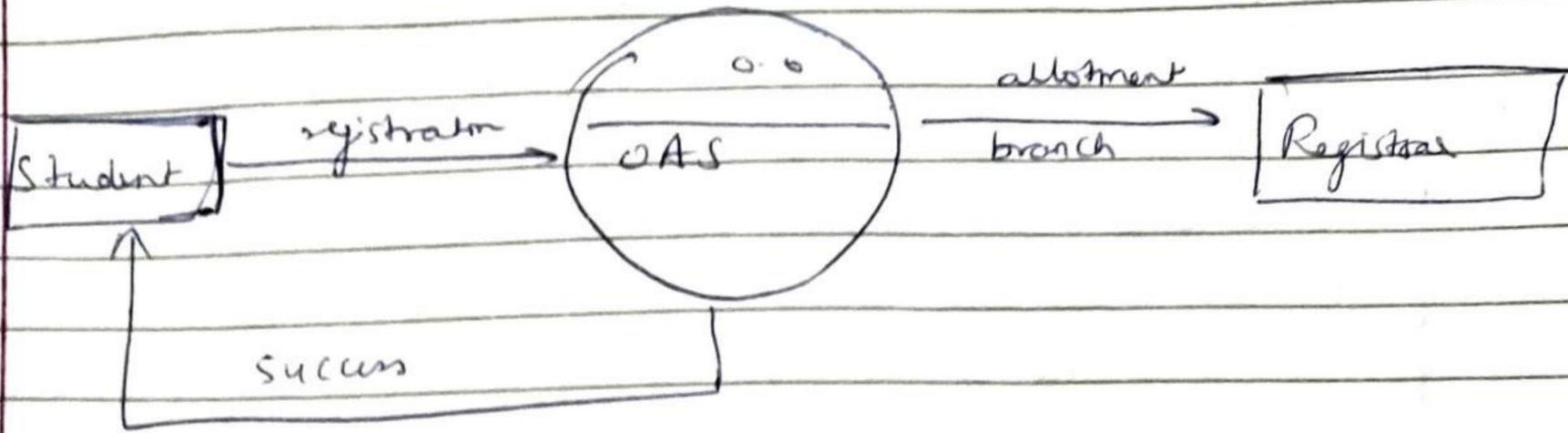
C.

Merit List Generation

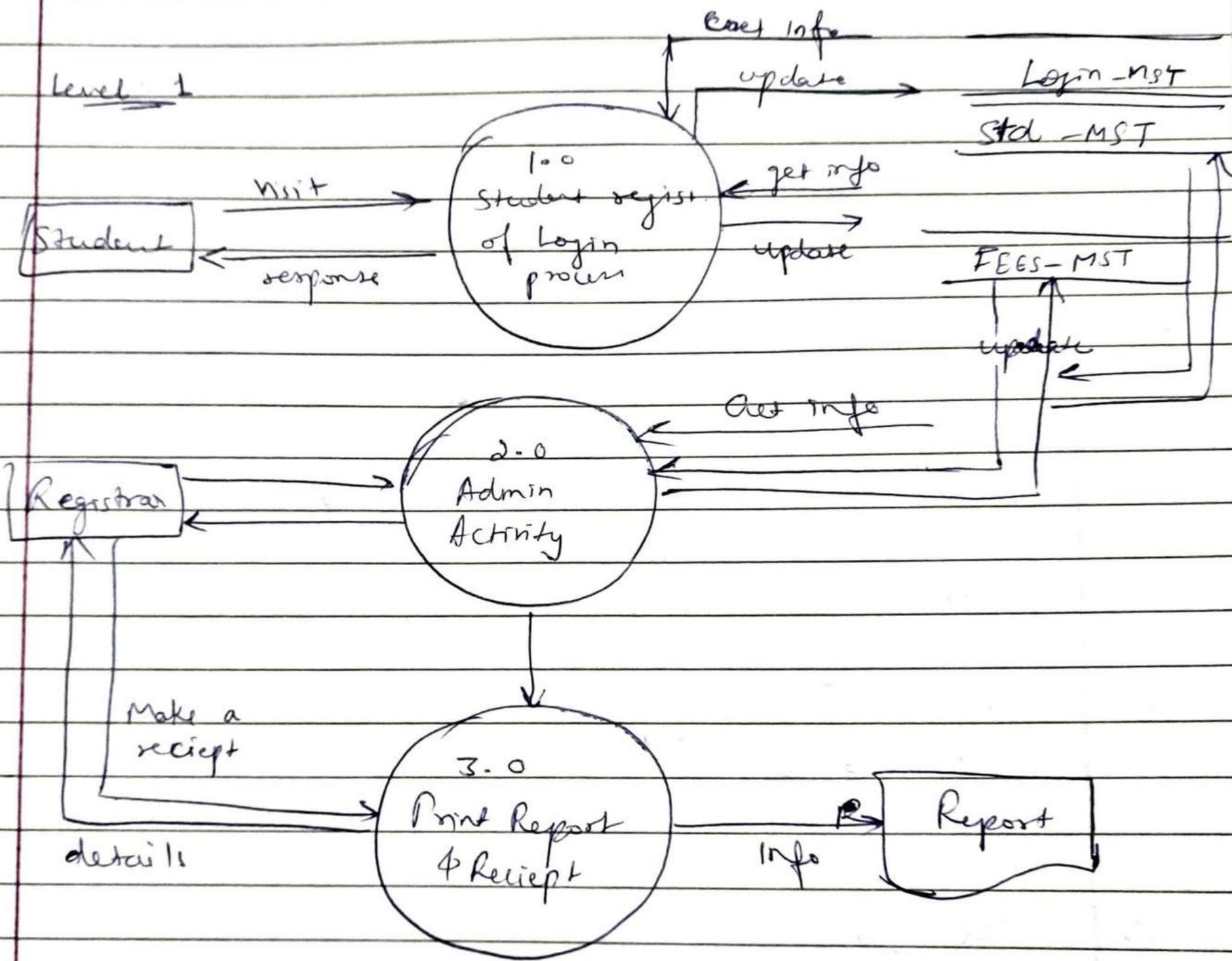
Acc. to Govt rules & Regulations & weightages Merit list is generated for valid applicants based on criteria defined for admission process.

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DFD Level 0



Level 1



(7) List queries of whom Reports can be generated

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- D.) Change Request  
Student can send their misc changes requests through their login & admin can accept / reject the changes & open the submitted form for correction.
- E.) Report Downloading Every College is supposed to generate their own report of admissions which includes the stats of number of admissions made, the courses, the rest available seats, a fee structure & so on.
- F.) Information Access At any certain point, if there is any problem with accessibility of any part of software at any end of any entity, that's where the admin comes to rescue. He can provide access to particular entity.
- G.) Report Compliance  
Admin is supposed to generate report of entire procedure. The aim to generate this report to conform the data provided & available.
- H.) Category wise Admission The term Category doesn't necessarily mean the caste category, but also the course work.
- I.) Gender Ratio  
Analysis comes under the few above listed functions like Category-wise admissions, Report Compliance etc. The admin has to scrutinize the male, female ratio of admission allotment.