Project Synopsis

Preliminary Investigation

Index for Project Documentation

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University Guideline for Project Development

1. Project can be Stand Alone, Multi-user or Web Based. Projects must be done using Java or Net Technologies & RDBMS.
2. Each student shall do the project individually, though a project with the same topic name could be done by more than one student.
3. A project guide should be assigned to students (Maximum 24 students for 1 guide). He/she who will assign a schedule for each phase of the project and hand it over to students. The guides should oversee the project progress on a weekly/fortnightly basis. The guides should control iteration if any non-linear technique is used for project development. It is advisable that the design phase gets over in the first term. Sample schedule can be as follows-

Phase	Time of completion
Preliminary investigation	30th June
System Analysis	14th August
System Design	30th September
Coding	15th December
Implementation	5th January
Project Report Submission	15th January

4. College can arrange few sessions by experienced industry people on project management/best practices/technologies etc.
5. The student will maintain a Gantt chart from the given schedule and completion of each phase should be noted on the chart.
6. Like Gantt Chart, a separate table should be maintained to check timely completion of the project. The table should contain the names of phases & its sub-phases, Expected Date of completion and Actual Date of completion. The guide should sign and mention the actual date of completion in the specific column of this table. This table should be produced at the time of final project demonstration and should be used for assigning marks. The dates of this table should match with the dates of Gantt Chart. For the students who fail to do projects as per the schedule, project guide can sign the projects with late remarks.

   Sample Phase completion table-

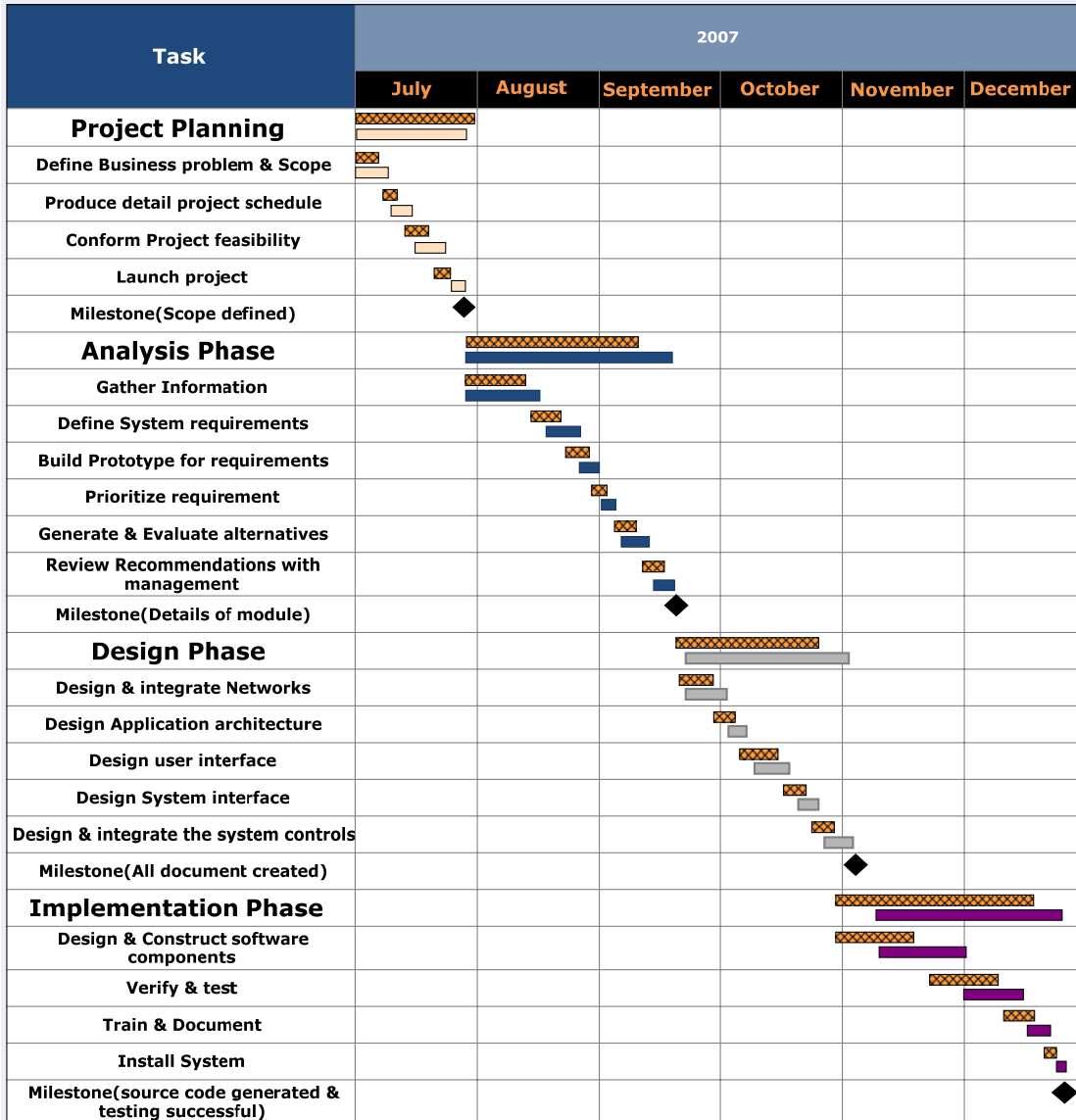 | Phase title | Expected date of Completion | Actual time of Completion with Guide's Signature | Remarks |
   |---|---|---|---|
   | I. Phase Name | 30th June | | |
   | a) Sub Phase I | 20th June | | |
   | b) Sub Phase N | 30th June | | |
   | II. Phase Name | 14th August | | |
   | a) Sub Phase I | 5th August | | |
   | b) Sub Phase N | 14th August | | |

7. After the Completion of phase/projects, demos can be planned in front of faculties/clients/students.
8. Projects should have at least following:
   a) Good content management, presentation & meaningful images.
   b) Data entry with Validations.

c) Suitable navigation schemen (menus/toolbars/tabs/links etc).
d) Record Manipulation (ad, update, delete, display, search, sort).
e) Transactions/Sessions/Reports/Feedback/Registration whichever applicable.
f) Login accounts (Admin & User) with separate functionalities for administrators and users.

9. A certificate should be added in the project report which should contain the following information-
   a) The fact that the student has successfully completed the project as per the syllabus and that it forms a part of the requirements for completing the BSc degree in Computer Science of University of Mumbai.
   b) The name of the student and the project guide.
   c) The academic year in which the project is done.
   d) Date of submission.
   e) Signature of the project guide and the head of the department with date along with the department stamp.
   f) Space for signature of the university examiner and date on which the project is evaluated.
10. Project should be evaluated by External Examiner as follows-
    i. Project Quality → 10 marks
    ii. Adherence to schedule → 10 marks
    iii. Working of Project → 20 marks
    iv. Student's Presentation → 10 marks
    Note:
    i. Evaluating "Adherence to schedule" : A project can approximately have 5 phases. Completion of these phases on time will carry 2 marks. Sub-phases need not go as per the schedule but main phase should be completed as per the plan. However, a grace period of 7 days should be given for completing each phase. If the project gets delayed after 7 days of actual time of completion, then the marks can be cut. Concession of some more days can be given for students having genuine reasons (medical cases etc) but it should be mentioned in remarks.
    ii. Evaluating "Project Quality": It involves overall modules included in the project, whether it was sufficiently large enough so that it can be done in a year, whether validations were done for data entry, variety of reports etc.
    iii. Evaluating "Working of the Project": It involves error-free execution of the project.
    iv. Evaluating Student's Presentation: Marks can be given based on the presentation skills of a student. A student can prepare a power point presentation for the project.

Guideline for Synopsis Preparation

- **Organizational Overview :**
  - Background of Company
  - Industry description (eg. Entertainment/ IT/ Educational/Service/ Manufacturing)
  - Owner Details
  - Product Description
  - Turnover
  - Manpower
- **Description of System**
  - About Existing System (Manual or Automated Software)
  - No. of modules or Registers used to maintain data.
- **Limitations of present system**
  - If manual system exist then limitations of all file management system can be written
  - If automated system exist then system can be declared as outdated system or new requirements cannot be incorporated in existing system can be mentioned
- **Proposed system and its adv. [for web project, URL can be mentioned].**
  - Platform of new system
    - Hardware requirement: Details of (PC speed, Ram, Hard-disk, Internet, Printer, Scanner, Barcode Reader, LAN, Server Client network etc)
    - Software requirement: Details of Language for Development, Operating System, Database, .net framework, Java virtual machine etc
  - Scope of new System:
    - List of Automated modules which you are planning to build
    - Reports which will be generated by New system.
    - Advantages of New System
    - Limitation of New System
- **Feasibility Study**
  - Textbook description about all feasibility and how it is applied to new system.
    - Operational Feasibility
    - Economical Feasibility
    - Technical Feasibility
    - Schedule Feasibility
- **Stakeholders**
  - Textbook description about all stake holder and details of your system stakeholder like,
    - Client/ Owner
    - End-user / Staff
    - Technical Staff
- **Gantt Chart**
  - Drawing of Gantt chart.

Gantt Chart

Task	2007					
	July	August	September	October	November	December
Project Planning	▨					
Define Business problem & Scope	▨					
Produce detail project schedule	▨					
Conform Project feasibility	▨					
Launch project	▨					
Milestone(Scope defined)	◆					
Analysis Phase		▨				
Gather Information		▨				
Define System requirements		▨				
Build Prototype for requirements		▨				
Prioritize requirement			▨			
Generate & Evaluate alternatives			▨			
Review Recommendations with management			▨			
Milestone(Details of module)			◆			
Design Phase			▨			
Design & integrate Networks			▨			
Design Application architecture			▨			
Design user interface				▨		
Design System interface				▨		
Design & integrate the system controls				▨		
Milestone(All document created)				◆		
Implementation Phase					▨	
Design & Construct software components					▨	
Verify & test					▨	
Train & Document						▨
Install System						▨
Milestone(source code generated & testing successful)						◆

Legend

◆	Milestone marker
▨	Estimated Time
▭	Required time for Planning Phase
▬	Required time for Anlysis Phase
▬	Required time for Design Phase
▬	Required time for Implementation Phase

Example:

- **Organizational Overview :**
  - Omkar medical is located in Dombivli at prime location. Since 1998 it is operated by Mr. ABC PQR who is an owner of this medical. His annual turnover is approx. 45 lacs.
  - Omkar Medical Stores keeps all sorts of medicines such as Tablets, saline's, injections etc. This Store is handling stock reports, Product details, Sales & Purchase Details manually.
  - Manpower available is around 12 employees.
  - Address-4, Milap Apartment, Milap Co-op Hsg Society Ltd.,Nandivli Road, near D.N.C School, Dombivli (East) 421 201
  - Omkar Medical & General stores includes all sorts of medicines, first aids, surgical instruments, Ayurvedic medicines. Since 1998, when it was established, this organization is handling the stock, product details manually.
  - In the last year, it has removed the center to much extend with product details and supply details.

- **Description of System**

  - Some Of the Important points are as follows:-
    - The Bill Generation is also done manually by keeping a separate Chemist Register Book.
    - Purchase Order of the products is also given manually.
    - The products for which order is to be given are written in a separate Chemist book with product name, company name & quantity etc.
    - From this Chemist Book total purchase records of the products are maintained & from bill generation register books total sales records are maintained.
    - Finally, both these sales and purchase records are given to The accountant of the medical store who will calculate total Profit or incurred loss details for medical store manually.

- **Advantages of Present System**
  - Even though present system handles all the functions manually but it has one advantage that it does not depend on electricity as it is independent of computer based platform.
  - It is also safe from various disadvantages of computer media such as hard disk failure, overheads etc.

- **Limitations of present system**

  Although the present system is working properly, it has

  - Certain limitations which are as follows:-
  - Most of the work is done manually.
  - This system is time consuming & requires lot of paper work.
  - Searching of old data is very difficult & time consuming.
  - Reports like stock, Sales, Purchase are generated manually.
  - As records are stored in registers, there is possibilityof misplacing of data.
  - Errors can occur during manual process of data records. Since it is manual system, it is never error free.
  - Upgrading & updating of the existing informationbecomes very difficult.
  - As the number of products goes on increasing, it becomes very difficult to maintain.
  - Even though some part of the system is computerized, i.e they are stored in MS-Access databases, the updation done in any one database does not reflect in other databases immediately.
  - Data stored in registers which is very tedious & inefficient.
  - Expired Medicines status is difficult to manage.

- **Proposed System and its Advantages**

- The present System handles all records of medicines, purchase, and sale manually on the paper. In the proposed system, all activities are converted into the computerized system. The basic purpose of this system is to maintain records of order, products, sales & stock management. This proposed System also generate sales, purchase, stock reports automatically
- Also if any customer enquires about any particular product then searching for the availability of that product in the system is also very easy.
- Expired Medicines can be monitored more effectively.
- Duplication of stock can be removed.

Some of the Salient features of this proposed system are:-
- **Enquiry Section**: If the customer enquires about any particular type of product such as medicine then by giving product id, name, type (i.e. General, Ayurvedic etc) as input to the system, we will get the output as the availability of that product in the shop. In other words, searching efficiency of product increases.
- **Searching Section**: The proposed system also contains Searching facility for product info, Vendor info, Expired products to facilitate efficient search.
- **Sales & Purchase Details**: In this proposed system, sales & purchase details of products are maintained as follows:
- For keeping the sales records of products, medical shop keeps a separate chemist book. During sales of the products, the record of that product sale entry is made in the chemist book manually then that sale entry of that product is made in the system. In this way, system will keep the sales records of each product daily.
- For giving purchase order for the products, first of all the product records in the shop is viewed & then products which are not in the shop means stock of that products is finished, for that products the purchase order is given to the supplier. This purchase record is stored in the system with purchase order id & date so that we can get the purchase order details easily from the system.
- **Reports Generation:** Finally, from the system, sales & purchase records can be generated as an output from the system. From these sales & purchase records, monthly orYearly income of the medical shop can be easily calculated.
- **Expired Product Reports**: After each month, all expired products in medical shop will be searched and a separate report of these expired products is generated so that all those products will be removed from the stock.

- **Limitation of New System**
  - Even though the proposed system has many advantages over the present manual system, it has certain drawbacks also which are as follows:-
  - As all manual system is to be converted into the computerized system, conversion of data is required.
  - As sales & purchase records are generated automatically by the system, human thinking power reduces considerably & it becomes totally dependent on the computer.
  - If computer hard disk fails, then entire process of stock generation is very critical & tedious job.
  - Computers require electricity. If there is no electricity then management of system is impossible.
  - This software "Medical Shop Management System" is going to be developed by XYZ. The basic purpose of this software is to accommodate and maintain the records of order, products, sales etc. and stock management.
  - Medical shop inventory system accounts for all above things and also provides more organized and sophisticated technique to handle all transaction of center. The software can be used by novice users, but it is intended to be used by the normal PC user.
  - The need for developing this software is the existing system.

- The current system involved most of the work to be performed manually. There is no organized data storage nor is there any provision for handling the stock records.
- This software is going too developed in Visual Basic 6.0 as front end and Microsoft Access as back end database.

Project Feasibility study

- Feasibility: A measure of how beneficial or practical the development of information system would be to an organization can be termed as Project Feasibility.
- Feasibility analysis is the process by which feasibility is measured.
- Feasibility should be measured throughout the life cycle. The scope and complexity of an apparently feasible project can change after the initial problems and opportunities are fully analyzed nr after the system has been designed. Thus, a project that is feasible at one point may become infeasible later.

The checkpointsfor feasibility study are: -

- A survey phase checkpoint

- A study phase checkpoint.

- A definition phase checkpoint

- A selection phase checkpoint.

- Procurement phase checkpoint.
- Design phase checkpoint

- The objective of assessing feasibility is to determine whether a development project has a reasonable chance of success. The team assesses the original assumptions and identifies other risks that could jeopardize the project's success.
- Generally there are following areas of risk for a new system that are considered when confirming project feasibility:

1. **Operational feasibility /Organizational and cultural feasibility**is measure of how well the solution will work in the organization. It is also a measure of how people feel about the system or project.

2. **Technicalfeasibility** is a measure of how the practicality of a specific technical solution and the availability of technical resources and expertise.

3. **Schedule feasibility** is a measure of how responsible the project timetable is.

4. **Economic feasibility** is a measure of cost-effectiveness of a project or solution. This is often called *a cost-benefit analysis.*

Stakeholders:

The stakeholders are those people who have an interest in the success of the new system. i.e. successful implementation of the new system.

There are 3 groups of stakeholders:
- The Clients
  who pay for and own the system,

- The End users
  Who actually use the system on the daily basis,

- The Technical Staff

Who must ensure that the system operates in the computing environment of the organization.

One of the most important first steps in determining the system requirements is to identify the various system stakeholders.

Clients:
The clients are those that initiate the system development monitor its progress and eventually are responsible for providing funding for it.

They are considered to be important stakeholders because the project team must provide status reviews to the client from time to time throughout the development project.

They are normally the top executive management of the organization, but could be the trustees or the Board of Directors as well.

End users:
The types of system users should be identified in two dimensions: - horizontal and vertical

Horizontal dimension means the analyst must look for information flows across business departments or functions. Horizontal dimension is an indication that many different departments, even those that may appear unrelated to the system must be included in the definition of the requirements.

Vertical dimension means the information needs of clerical staff (operational staff), the middle management and the senior executives (top management). Each of these stakeholders will have different information requests for the system that must be included in the design.

The Technical Staff:
The technical users are the operational and supervisory staff of the existing computer system.

They provide the technical inputs to the system analysts, like guidance regarding the programming languages or hardware platform or any other critical technical information.

Modeling system requirements for events

Events:
      An event occurs at a specific time and place. It can be described and should be remembered by the system.

Useful events are those, which are:
- i.   Events that will affect the system under study.
- ii.   Events that will require the system to respond.

There are three types of events:
- 1) External Events:
- 2) Temporal Events
- 3) State Events

External Events:

They are initiated by an *external agent* or an *actor* and occurs outside the system.

An **external agent** is a person or an organizational unit i.e. either a source or the sink of data from the system.

External events occur when:
- External agent wants something that results in a transaction.
- External agent wants some information
- Data needs to be updated.
- Management wants some information.

Temporal Events:
      They are the events that occur at a point in time.

For eg: - periodic events like monthly or weekly information.
      aperiodic events like an overdue notice 15 days after the due date.

Temporal Events occur for:
- Operational and statutory detailed reports.
    E.g.:- ledger books or books of accounts
- Management summaries and exception reports.
    E.g.:- list of the customers with more than 30 day overdue balance.
- Internal statements and status reports.
- External statements like pending invoices or reminders.

State Events:
      State Events occur when an entity within a system reaches a certain state which triggers an event.

For e.g.:- inventory reducing to ROL (Re- Order Level)

EVENT TABLE

Event table is a list of events of a system in rows and information about each event like
- Event trigger
- Event source
- Event activity
- Event response
- Event destination, in columns.

Event trigger:
      An occurrence that initiates the event, which is either the arrival of data or of a point in time.

Event source:
      An external agent or actor that supplies data to the system.

Event activity:
      Behaviour of the system due to the occurrence of the event.

Event response:
      An output produced by the system as a result of the event.

Event destination:
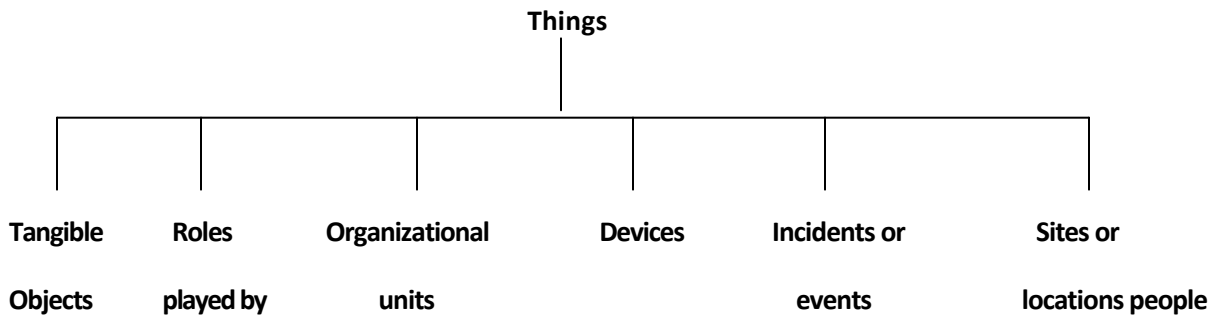 An external agent or actor that receives the response generated by the system.

Modeling system requirements for objects, roles

Entities:
Entities are persons, places, events, objects, or concepts.
They are
  - "things" that a user works with.
  - are a part of the system under development and
  - their details should be captured and stored in the system.
For e.g.:- orders, products, customer, students etc.

Types of Entities / Things

Things

| Tangible | Roles | Organizational | Devices | Incidents or | Sites or |
| Objects | played by | units | | events | locations people |

Tangible objects:
  Tangible objects are measurable objects or things in a system that affect the system in some way.
Eg: - book, vehicle, document (Biodata, bills, reports, etc), catalog, item or Product etc.

Roles played by **people:**
  These are the different roles played by human beings that affect the system in some way.

E.g.: - customer, employee, doctor, patient, shopkeeper, end user, system administrator, etc.

Organizational units:
  These are the divisions or units of an organization that are involved in a system.

E.g.: - departments (sales, production, accounts, etc), workgroup, sections, task force etc.

Devices:
  These are the devices or instruments used by the system.
E.g.: - sensor, timer, printer, display, window, mouse, menu, button etc.

Incidents, events or interactions:
  These are some events or incidents occurring in the system.
E.g.: flight, service call, logon, logoff, contract, purchase order, payment, etc.

Sites or locations:
  These are any sites or locations that are important to a particular system.

E.g.: warehouse, branch office, factory, retail shop, desktop, etc.

Relationship:

A relationship is a naturally occurring association among entities.

E.g.: an order "is placed" by a customer An employee "works" in a department.

Relationships between entities are 2 ways (or directions)

i)   Customer places an order
ii)   An order is placed by a customer

Cardinality:

Cardinality of relationship is the no of associations that occur between the entities. Multiplicity is an object-oriented approach.

Types of cardinality:

The different types of cardinalities that occur between any two entities are:

a)   One - one

b)   One - many, many - one

c)   Many - many

The range of possible values of cardinality is 0, 1 or more.
A *mandatory relationship* is one where at least one association is required.
An *optional relationship* is one where it is not necessary to have even a single association between entities.
A **binary relationship** occurs between two entities.

A **ternary relationship** occurs between three entities.

A **unary or a recursive relationship** exists between a single entity in two roles

E.g.: employee and manager are two different entities, but managers are also employees. So they are related.
An **n-ary relationship** exists between n>3 entities (more than 3 entities)

Attributes:

Attributes are properties or characteristics of an entity that are useful to a system and whose values need to be stored in it.

a)   An attribute that uniquely identifies an instance of an entity is the *key attribute* or the *key identifier* of the entity.

b) A compound attribute is one that contains a collection of related attributes.

Entity Relationship Diagram:

The traditional approach places a great deal of emphasis on data storage requirements for the new system. Data storage requirements include the data entities, their attributes and the relationships among the data entities.
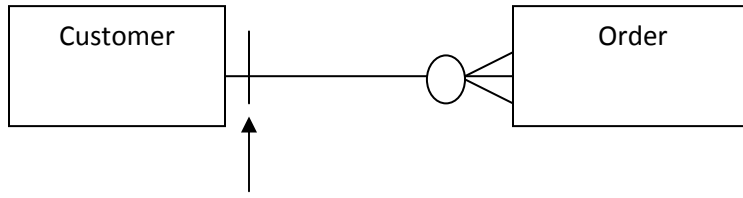
The model used to define the data storage requirements is called the entity-relationship diagram (ERD).

On the ERD, the following symbols are used:
- Rectangles represent data entities
- Lines connecting the rectangles show relationships among the data entities.
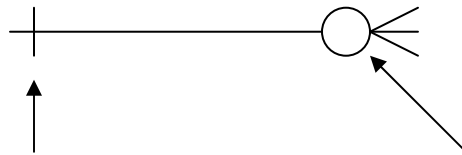
For eg:

A customer can place zero or more orders

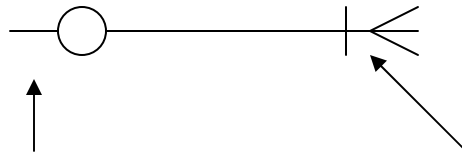| Customer | | | Order |

mandatory

An order can be placed by exactly one customer

Cardinality symbols:

Exactly one (mandatory)   Zero or more (optional)

Zero or one (optional)   one or more (mandatory)