Chapter 1 : TITLE PROPOSAL FOR SYSTEM ANALYSIS AND DESIGN by Patricia Villa on Prezi

System Analysis and Design Overview - Learn System Analysis and Design in simple and easy steps starting from basic to advanced concepts with examples including Overview, System Development Life Cycle, Planning, Design, Implementation and Maintenance, Security and Audit, Structured Analysis, Design Strategies, Input / Output and Forms Design, Testing and Quality Assurance, Object Oriented.

SSADM can be thought to represent a pinnacle of the rigorous document-led approach to system design, and contrasts with more contemporary agile methods such as DSDM or Scrum. SSADM made mandatory for all new information system developments Version 4 launched The method was repackaged into 15 modules and another 6 modules were added. Logical data modeling The process of identifying, modeling and documenting the data requirements of the system being designed. The result is a data model containing entities things about which a business needs to record information , attributes facts about the entities and relationships associations between the entities. Data Flow Modeling The process of identifying, modeling and documenting how data moves around an information system. Data Flow Modeling examines processes activities that transform data from one form to another , data stores the holding areas for data , external entities what sends data into a system or receives data from a system , and data flows routes by which data can flow. Entity Event Modeling A two-stranded process: Entity Behavior Modeling, identifying, modeling and documenting the events that affect each entity and the sequence or life history in which these events occur, and Event Modeling, designing for each event the process to coordinate entity life histories. Stages[edit] The SSADM method involves the application of a sequence of analysis, documentation and design tasks concerned with the following. Stage 0 â€" Feasibility study[edit] In order to determine whether or not a given project is feasible, there must be some form of investigation into the goals and implications of the project. For very small scale projects this may not be necessary at all as the scope of the project is easily understood. When a feasibility study is carried out, there are four main areas of consideration: Technical â€" is the project technically possible? Financial â€" can the business afford to carry out the project? Organizational â€" will the new system be compatible with existing practices? Ethical â€" is the impact of the new system socially acceptable? To answer these questions, the feasibility study is effectively a condensed version of a fully blown systems analysis and design. The requirements and users are analyzed to some extent, some business options are drawn up and even some details of the technical implementation. The product of this stage is a formal feasibility study document. SSADM specifies the sections that the study should contain including any preliminary models that have been constructed and also details of rejected options and the reasons for their rejection. Stage 1 â€" Investigation of the current environment[edit] The developers of SSADM understood that in almost all cases there is some form of current system even if it is entirely composed of people and paper. Through a combination of interviewing employees, circulating questionnaires, observations and existing documentation, the analyst comes to full understanding of the system as it is at the start of the project. This serves many purposes. Stage 2 â€" Business system options[edit] Having investigated the current system, the analyst must decide on the overall design of the new system. To do this, he or she, using the outputs of the previous stage, develops a set of business system options. These are different ways in which the new system could be produced varying from doing nothing to throwing out the old system entirely and building an entirely new one. The analyst may hold a brainstorming session so that as many and various ideas as possible are generated. The ideas are then collected to options which are presented to the user. The options consider the following: The users and analyst together choose a single business option. This may be one of the ones already defined or may be a synthesis of different aspects of the existing options. The output of this stage is the single selected business option together with all the outputs of the feasibility stage. Using the requirements developed in stage 1 and working within the framework of the selected business option, the analyst must develop a full logical specification of what the new system must do. The specification must be free from error, ambiguity and inconsistency. By logical, we mean that the specification does not say how the system will be implemented but rather describes what the system will do. To produce the logical specification, the analyst builds the required logical models for both the

data-flow diagrams DFDs and the Logical Data Model LDM , consisting of the Logical Data Structure referred to in other methods as entity relationship diagrams and full descriptions of the data and its relationships. These are used to produce function definitions of every function which the users will require of the system, Entity Life-Histories ELHs which describe all events through the life of an entity, and Effect Correspondence Diagrams ECDs which describe how each event interacts with all relevant entities. These are continually matched against the requirements and where necessary, the requirements are added to and completed. The product of this stage is a complete requirements specification document which is made up of:

Chapter 2 : A Decision Table Example - Systems Analysis

CSIS Systems Analysis and Design Course Objectives. Project planning and implementation, elicitation and specification of user requirements, graphical modeling of objects, data, and processes, and design of data structures, user interfaces, and system behaviors.

E2 in R Three types of relationships can exist between two sets of data: File Organization It describes how records are stored within a file. Randomizing routine or hashing algorithm does the conversion. File Access methods allow computer programs read or write records in a file. It is efficient when a large number of the records on the file need to be accessed at any given time. Data stored on a tape sequential access can be accessed only sequentially. Direct Random Access Records are located by knowing their physical locations or addresses on the device rather than their positions relative to other records. Data stored on a CD device direct-access can be accessed either sequentially or randomly. For example, customer file, student file, telephone directory. For example, storing Zipcode. It is used to update or process the master file. For example, Addresses of the employees. Help minimize the risk of downtime in cases when the original becomes unusable. They must be modified each time the original file is changed. It facilitates auditing and provides mechanism for recovery in case of system failure. Documentation Control Documentation is a process of recording the information for any reference or operational purpose. It helps users, managers, and IT staff, who require it. It is important that prepared document must be updated on regular basis to trace the progress of the system easily. After the implementation of system if the system is working improperly, then documentation helps the administrator to understand the flow of data in the system to correct the flaws and get the system working. Programmers or systems analysts usually create program and system documentation. Systems analysts usually are responsible for preparing documentation to help users learn the system. In large companies, a technical support team that includes technical writers might assist in the preparation of user documentation and training materials. Advantages It can reduce system downtime, cut costs, and speed up maintenance tasks. It provides the clear description of formal flow of present system and helps to understand the type of input data and how the output can be produced. It provides effective and efficient way of communication between technical and nontechnical users about system. It facilitates the training of new user so that he can easily understand the flow of system. It helps the user to solve the problems such as troubleshooting and helps the manager to take better final decisions of the organization system. It provides better control to the internal or external working of the system.

Chapter 3 : Systems Analysis Interesting Web Sites List

Systems analysis is a problem-solving method that involves looking at the wider system, breaking apart the parts, and figuring out how it works in order to achieve a particular goal. It is often.

Activities include, but are not limited to: If it is a large system involving many different departments, maintenance and support may be needed for a longer time. If is a smaller system, maintenance and support may only be needed for a short time. Systems Development Methods[edit] This section discusses the most popular methods for developing computer-based information systems. A popular, traditional method is called structured analysis, but a newer strategy called object-oriented analysis and design also is used widely. Each method offers many variations. Some organizations develop their own approaches or adopt methods offered by software vendors or consultants. Most IT experts agree that no single, best system development strategy exists. Instead, a systems analyst should understand the alternative methods and their strengths and weaknesses. Structured Analysis Structured analysis is a traditional systems development technique that is time-tested and easy to understand. Because it describes the processes that transform data into useful information, structured analysis is called a process-centered technique. In addition to modeling the processes, structured analysis includes data organization and structure, relational database design, and user interface issues. Structured analysis uses a series of phases, called the systems development life cycle SDLC to plan, analyze, design, implement, and support an information system. Structured analysis relies on a set of process models that graphically describe a system. Process modeling identifies the data flowing into a process, the business rules that transform the data, and the resulting output data flow. Basically, the structured analysis technique requires that the developer defines three things: In order to see how all these functions work together, the data flow diagram DFD is needed to show the inputs, processes storage, and outputs. Object-oriented analysis defines the different types of objects that are doing the work and interacting with one another in the system and by showing user interactions, called use cases, are required to complete tasks. Systems analysts use O-O methods to model real-world business processes and operations. The result is a set of software objects that represent actual people, things, transactions, and events. Using an O-O programming language, a programmer then transforms the objects into reusable code and components. O-O analysis uses object models to represent data, behavior, and by what means objects affect other objects, By describing the objects data and methods processes needed to support a business operation, a system developer can design reusable components that allow faster system implementation and decreased development cost. The object-oriented approach has many benefits, they provide naturalness and reuse. The approach is natural because people tend to think about things in terms of tangible objects and because many systems within an organization uses the same objects i. Other Development Strategies In addition to structured analysis and O-O methods, there are other systems development techniques created by individual companies. Using MSF, you design a series of models, including a risk management model, a team model, model has a specific purpose and outputs that contribute to the overall design of the system. Although the Microsoft process differs from the SDLC phase-oriented approach, MSF developers do the same kind of planning,ask the same kinds of fct-finding questions,deal with the same kinds of design and implementation issues, and resolve the same kinds of problems. MSF uses O-Oanalysis and design concepts, but also examines a broader business and organizational context that surrounds the development of an information system [9]. Ad Hoc[edit] Ad hoc, is something that one can use to do a specific task but the process that was used cannot be used for another process. The whole project cannot run at that level. One can use a template to create a project but with Ad Hoc, it is not possible. As whole the term "Ad hoc" means for this purpose only. Often considered the classic approach to the systems development life cycle, the waterfall model mostly predictive describes a development method that is linear and sequential. Waterfall development has distinct goals for each phase of development. Once a phase of development is completed, the development proceeds drops over the waterfall into the next phase and there is no turning back. The advantage of waterfall development is that it allows for departmentalization and managerial control. A schedule can be set with deadlines for each stage of

development and a product can proceed through the development process like a car in a carwash, and theoretically, be delivered on time. Development moves from concept, through design, implementation, testing, installation, troubleshooting, and ends up at operation and maintenance. Each phase of development proceeds in strict order, without any overlapping or iterative steps. The disadvantage of waterfall development is that it does not allow for much reflection or revision. Once an application is in the testing stage, it is very difficult to go back and change something that was not well-thought out in the concept stage. This pure waterfall model makes it very difficult because there is no room for error and that is virtually impossible when dealing with humans. In the modification waterfall model, phases of projects will overlap influencing and depending on each other. For instance, if the analysis phase is completed and the project moves into the design phase but something was left out in the requirements in the analysis phase making it hard to implement in the design phase then additional project management tasks need to be added causing an overlap. Efficiency is another reason why overlapping might occur. Some activities depend on the results of prior work. In the project planning phase, there might be some additional project management tasks that need to be added, in the analysis phase, additional analysis activities may be added, and in the design phase, additional design activities may be added. Basically, the modified waterfall model is a more efficient model to use. Today, many information systems and projects are based on the modified waterfall model. In terms of an information system, prototypes are employed to help system designers build an information system that is intuitive and easy to manipulate for end users. Prototyping is an iterative process that is part of the analysis phase of the systems development life cycle. Sometimes, end users are trying to improve on the business processes or simplify a procedure. Prototyping comes in many forms - from low tech sketches or paper screens Pictive from which users and developers can paste controls and objects, to high tech operational systems using CASE computer-aided software engineering or fourth generation languages and everywhere in between. Advantages of prototyping include; Reduction of developments time and cost User involvement.

Objectives Define the terms system, system analysis, and system design. Types of systems. Describe the principal functions of the systems analyst. List and describe the phases of the systems development life cycle. Describe the various data gathering and analysis tools. Describe a selection of systems design tools. Alternative approaches to.

Table of Contents The key to success in business is the ability to gather, organize, and interpret information. Systems analysis and design is a proven methodology that helps both large and small businesses reap the rewards of utilizing information to its full capacity. As a systems analyst, the person in the organization most involved with systems analysis and design, you will enjoy a rich career path that will enhance both your computer and interpersonal skills. Systems Analysis and Design SAD is an exciting, active field in which analysts continually learn new techniques and approaches to develop systems more effectively and efficiently. However, there is a core set of skills that all analysts need to know no matter what approach or methodology is used. All information systems projects move through the four phases of planning, analysis, design, and implementation; all projects require analysts to gather requirements, model the business needs, and create blueprints for how the system should be built; and all projects require an understanding of organizational behavior concepts like change management and team building. The major goal of systems analysis and design is to improve organizational systems. Often this process involves developing or acquiring application software and training employees to use it. Application software, also called a system, is designed to support a specific organizational function or process, such as inventory management, payroll, or market analysis. The goal of application software is to turn data into information. For example, software developed for the inventory department at a bookstore may keep track of the number of books in stock of the latest best seller. Software for the payroll department may keep track of the changing pay rates of employees. A variety of off-the-shelf application software can be purchased, including WordPerfect, Excel, and PowerPoint. However, off-the-shelf software may not fit the needs of a particular organization, and so the organization must develop its own product. Information systems analysis and design is a method used by companies ranging from IBM to PepsiCo to Sony to create and maintain information systems that perform basic business functions such as keeping track of customer names and addresses, processing orders, and paying employees. The main goal of systems analysis and design is to improve organizational systems, typically through applying software that can help employees accomplish key business tasks more easily and efficiently. As a systems analyst, you will be at the center of developing this software. The analysis and design of information systems are based on: This tutorial builds on our professional experience as systems analysts and on our experience in teaching systems analysis and design in the classroom. This tutorial will be of particular interest to instructors who have students do a major project as part of their course. Each chapter describes one part of the process, provides clear explanations on how to do it, gives a detailed example, and then has exercises for the students to practice. In this way, students can leave the course with experience that will form a rich foundation for further work as a systems analyst. Systems analysis and design is typically taught in one or two semesters. Our tutorial may be used in either situation. The text is appropriate for undergraduate junior or senior curricula at a four-year university, graduate school, or community college. The level and length of the course can be varied and supplemented by using real-world projects, HyperCase, or other materials available on the Instructor Resource Center. Chapters 1â€"3 stresses the basics that students need to know about what an analyst does and introduces the three main methodologies of the systems development life cycle SDLC , agile approaches, and object-oriented analysis with UML, along with reasons and situations for when to use them. These sections show how a variety of emerging information systems, including mobile and wireless technologies, and enterprise systems integrate IT and fit into organizations; how to determine whether a systems project is worthy of commitment; e-commerce project management; and how to manage a systems project using special software tools. The three roles of the systems analyst as consultant, supporting expert, and agent of change are introduced, and ethical issues and professional guidelines for serving as a systems consultant are covered. There is also material on virtual teams and virtual organizations, and the concept of HCI is introduced. The

use of open source software OSS is also introduced. Chapter 2 includes how to initially approach an organization by drawing context-level data flow diagrams, using entity-relationship models, and developing use cases and use case scenarios. Chapter 3 introduces expanded material on creating the project charter and introduces writing the systems proposal early in the process, no matter what method of analysis and design has been chosen. Expanded coverage of evaluating software and hardware, and when to use COTS commercial off-the-shelf software , is included. This chapter teaches several methods for forecasting costs and benefits, which are necessary to the discussion of acquiring software and hardware. Chapter 3 helps students evaluate software by assessing trade-offs among creating custom software, purchasing commercial-off-the-shelf COTS software, or outsourcing to an application service provider ASP. Creating a problem definition and determining feasibility are also covered. Chapter 3 guides students in professionally writing and presenting an effective systems proposal, one that incorporates figures and graphs to communicate with users. Chapters 4â€"6 emphasizes the use of systematic and structured methodologies for performing information requirements analysis. Attention to analysis helps analysts ensure that they are addressing the correct problem before designing the system. Chapter 4 introduces a group of interactive methods, including interviewing, joint application design JAD , and constructing questionnaires. Chapter 5 introduces a group of unobtrusive methods for ascertaining information requirements of users. Chapter 6 on agile modeling and prototyping is innovative in its treatment of prototyping as another data-gathering technique that enables the analyst to solve the right problem by getting users involved from the start. Agile approaches have their roots in prototyping, so this chapter begins with prototyping to provide a proper context for understanding, and then takes up the agile approach. The values and principles, activities, resources, practices, processes, and tools associated with agile methodologies are presented. This chapter also includes material on rapid application development RAD for human information-requirements gathering and interface design. Chapters 7â€"10 details the analysis process. It builds on the previous two parts to move students into analysis of data flows as well as structured and semi-structured decisions. It provides step-by-step details on how to use structured techniques to draw data flow diagrams DFDs. Chapter 7 provides coverage of how to create child diagrams; how to develop both logical and physical data flow diagrams; and how to partition data flow diagrams. Chapter 8 features material on the data repository and vertical balancing of data flow diagrams. Chapter 8 also includes extensive coverage of extensible markup language XML and demonstrates how to use data dictionaries to create XML. Chapter 9 includes material on developing process specifications. A discussion of both logical and physical process specifications shows how to use process specifications for horizontal balancing. Chapter 9 also covers how to diagram structured decisions with the use of structured English, decision tables, and decision trees. In addition, the chapter covers how to choose an appropriate decision analysis method for analyzing structured decisions and creating process specifications. Push technologies are also introduced. This part concludes with Chapter 10 on object-oriented systems analysis and design. This chapter includes an in-depth section on using unified modeling language UML. Through several examples and Consulting Opportunities, this chapter demonstrates how to use an object-oriented approach. Consulting Opportunities, diagrams, and problems enable students to learn and use UML to model systems from an object-oriented perspective. Students learn the appropriate situations for using an object-oriented approach. This chapter helps students to decide whether to use the SDLC, the agile approach, or object-oriented systems analysis and design to develop a system. Chapters 11â€"14 covers the essentials of design. It begins with designing output, because many practitioners believe systems to be output driven. The design of Web-based forms is covered in detail. Particular attention is paid to relating output method to content, the effect of output on users, and designing good forms and screens. Chapter 11 compares advantages and disadvantages of output, including Web displays, audio, DVD, and electronic output such as email and RSS feeds. Designing a Web site for e-commerce purposes is emphasized, and output production and XML is covered. Chapter 12 includes innovative material on designing Web-based input forms, as well as other electronic forms design. Also included is computer-assisted forms design. Chapter 12 features in-depth coverage of Web site design, including guidelines on when designers should add video, audio, and animation to Web site designs. The chapter also covers uses of Web push and pull technologies for output designs. There is detailed consideration of how to create effective graphics for

corporate Web sites and ways to design effective onscreen navigation for Web site users. Coverage of intranet and extranet page design is also included. Consideration of database integrity constraints has been included as well, in addition to how the user interacts with the computer and how to design an appropriate interface. The importance of user feedback is also found in these topics. How to design accurate data entry procedures that take full advantage of computer and human capabilities to assure entry of quality data is emphasized here. Students are shown the relevance of database design for the overall usefulness of the system, and how users actually use databases. It introduces HCI, discussing its importance in designing systems that suit individuals and assisting them in achieving personal and organizational goals through their use of information technology. The concepts of usability, fit, perceived usefulness, and perceived ease of use are introduced, as is the Technology Acceptance Model TAM , so that systems students can knowledgeably incorporate HCI practices into their designs. Chapter 14 also features material on designing easy onscreen navigation for Web site visitors. The chapter presents innovative approaches to searching on the Web, highlights material on GUI design, and provides innovative approaches to designing dialogs. Chapter 14 articulates specialized design considerations for ecommerce Web sites. Mashups, new applications created by combining two or more Web-based application programming interfaces, are also introduced. Chapter 14 also includes extensive coverage on how to formulate queries, all within the framework of HCI. Chapters 15 and 16 concludes the tutorial. Chapter 15 focuses on designing accurate data entry procedures and includes material on managing the supply chain through the effective design of business-to-business B2B ecommerce. Chapter 16 emphasizes taking a total quality approach to improving software design and maintenance. In addition, material on system security and firewalls is included. Testing, auditing, and maintenance of systems are discussed in the context of total quality management. This chapter helps students understand how service-oriented architecture SOA and cloud computing are changing the nature of information systems design. In addition, students learn how to design appropriate training programs for users of the new system, how to recognize the differences among physical conversion strategies, and how to be able to recommend an appropriate one to a client. Chapter 16 also presents techniques for modeling networks, which can be done with popular tools such as Microsoft Visio. Material on security and privacy in relation to designing ecommerce applications is included. Coverage of security, specifically firewalls, gateways, public key infrastructure PKI , secure electronic translation SET , secure socket layering SSL , virus protection software, URL filtering products, email filtering products, and virtual private networks VPN , is included. Additionally, current topics of interest to designers of ecommerce applications, including the development and posting of corporate privacy policies, are covered. Important coverage of how the analyst can promote and then monitor a corporate Web site is included in this section, which features Web activity monitoring, Web site promotion, Web traffic analysis, and audience profiling to ensure the effectiveness of new ecommerce systems. Techniques for evaluating the completed information systems project are covered systematically as well.

Chapter 5 : Complete Business-Systems Analysis Model (UML Example)

System analysis and design performed by system analysts its need to explain data flow completely, transform data, store data and some of them. System analysis and design refers to improve the better procedures and methods and determine the nature of the organization improving the performance and goals.

Shipping and Receiving is responsible for incoming and outgoing restaurant items. Stock Keeping is responsible for maintaining restaurant supplies. These include, managing kitchen stocks and ordering necessary items. The Administration department is responsible for handling all incoming and outgoing restaurant finances. It receives receipts for bills from Shipping and Receiving, orders for items from Stock Keeping and receipts for taking from the Restaurant. BUC Diagram The above diagram does not contain a complete set of use cases, but includes those necessary to capture the functionality of the vision statement. All of the above use cases are candidates for automation. Maintain Food Stocks â€" This use case is concerned with ensuring that the restaurant is properly stocked with food supplies. The Kitchen receives benefit from this use case. Balance Books â€" This use case describes how finances are handled by the restaurant. Handle Customer Requests â€" This use case handles complaints, queries and any general questions from a customer. The Customer is the actor receiving benefit from the use case. Eat Food â€" This use case is concerned with seating, serving and billing the customer. The Customer is the actor receiving benefit from this use case. Note 2 â€" There are many ways that you may indicate the workers of each action in your activity diagram, without the use of swimlanes. These include adding stereotypes to the actions. I have used color to indicate which worker performs what action. Note 3 â€" Notice that every action includes an output flow to an object. It makes the activity diagram easier to maintain. Note 6 â€" This is an example of an alternate workflow. Notice that the flow begins with a decision and ends with a merge. The decision asks the question, does the customer wish to make use of the cloakroom? Note 7 â€" An example of an activity. In this instance the activity is being used to indicate that there are a lot of missing actions here. They are captured by the Order, Prepare and Serve Customer use case fragment [3]. Note 8 â€" This is an example of an extended flow. We know that it is an extension to the use case, because it does not return to the basic flow. Note 9 â€" This is an example of a fork. Notice how more elegant this notation is than trying to describe this activity with text. Note 10 â€" This is the successful postcondition. Note 12 â€" A non-successful postcondition. The objects that have been identified from the BUC activity diagrams are placed as business objects on a business objects diagram. The Business Objects Diagram Bill â€" A request for the customer to pay the cashier the amount indicated. Customer Belongings â€" That are exchanged for a cloakroom token. Customer Request â€" A request for restaurant assistance from a customer. Greeting â€" A welcome message to a customer entering the restaurant. Kitchen â€" Where food is prepared. Meal â€" Food served to a single customer at a single seating. Menu â€" What the customer uses to order food. Order â€" A combination of items from the menu for a single table. Payment â€" Money handed to the cashier. Restaurant â€" Where food is served to customers. Seating Chart â€" Displays which tables are reserved and which are free, as well as their size and location in the restaurant. Table â€" Reserved for customers in order that they may be served food. Token â€" A unique identifier for customer items in the cloakroom. The following actions have been extracted from the BUC activity diagram as candidates for automation. Candidate Use Case Activities Candidate use cases have been added to the activity diagram to indicate where automation is anticipated. The application model contains diagrams that capture the functionality of the application. For future release Each time a payment is accepted by the system, the banking system is updated with the amount received. Menu items and menu categories are selected from the system database. These are updated through the database entry screen, which is not within the scope of this project. For future release The menu system needs to inform the ordering system of food items that have been served to customers. Application Use Cases Diagram Figure 8: The Maintain Restaurant use case was added at the request of the head waiter in order to be able to add or remove tables for lunch seating. The Serve Customer use case is concerned with allowing the customer to order a meal from the restaurant menu. The Maintain Restaurant use case is concerned with of the restaurant layout. The customer selects menu items

from menu categories until ready to order. The system displays a running total of selected items. When satisfied, the customer may order their meal. The kitchen is sent the order. The meal is prepared and delivered to the customer, who is then billed for their order. Once the meal is paid for the customer receives a receipt and the system is reset for the next customer. Primary Actor Customer â€" The customer initiates the use case by selecting the menu system. New customer is selected [6] 2. The system displays the menu instructions 3. Menu is selected 4. The system displays the menu categories 5. The customer selects a menu category 6. The customer adds and removes menu items from the category until order is selected 8. The system displays the customer order 9. The customer confirms the order The system displays the confirmed order with total cost and displays the order to the kitchen The head waiter confirms that the order is delivered The system displays the bill to the customer The head waiter confirms that the bill is paid. The system displays the receipt The customer requests a printout of the receipt The system prints the receipt The use case ends.

Chapter 6 : Systems Analysis And Design: Final Exam Practice - ProProfs Quiz

INTRODUCTION TO SYSTEM ANALYSIS AND DESIGN by Mhd Nazreen 1. Types of Life Cycles Model Waterfall Model. Each phase must be completed before the next phase can begin.

Systems development is systematic process which includes phases such as planning, analysis, design, deployment, and maintenance. System analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives. It is a problem solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose. Analysis specifies what the system should do. Systems Design It is a process of planning a new business system or replacing an existing system by defining its components or modules to satisfy the specific requirements. Before planning, you need to understand the old system thoroughly and determine how computers can best be used in order to operate efficiently. System Design focuses on how to accomplish the objective of the system. The word System is derived from Greek word Systema, which means an organized relationship between any set of components to achieve some common cause or objective. Interconnectivity and interdependence must exist among the system components. The objectives of the organization have a higher priority than the objectives of its subsystems. For example, traffic management system, payroll system, automatic library system, human resources information system. It is the arrangement of components that helps to achieve predetermined objectives. Interaction It is defined by the manner in which the components operate with each other. For example, in an organization, purchasing department must interact with production department and payroll with personnel department. Interdependence Interdependence means how the components of a system depend on one another. For proper functioning, the components are coordinated and linked together according to a specified plan. The output of one subsystem is the required by other subsystem as input. Integration Integration is concerned with how a system components are connected together. It means that the parts of the system work together within the system even if each part performs a unique function. Central Objective The objective of system must be central. It may be real or stated. It is not uncommon for an organization to state an objective and operate to achieve another. The users must know the main objective of a computer application early in the analysis for a successful design and conversion. Inputs are the information that enters into the system for processing. Output is the outcome of processing. Processor s The processor is the element of a system that involves the actual transformation of input into output. It is the operational component of a system. Processors may modify the input either totally or partially, depending on the output specification. As the output specifications change, so does the processing. In some cases, input is also modified to enable the processor for handling the transformation. Control The control element guides the system. It is the decisionâ€"making subsystem that controls the pattern of activities governing input, processing, and output. The behavior of a computer System is controlled by the Operating System and software. In order to keep system in balance, what and how much input is needed is determined by Output Specifications. Feedback Feedback provides the control in a dynamic system. Positive feedback is routine in nature that encourages the performance of the system. Negative feedback is informational in nature that provides the controller with information for action. It is the source of external elements that strike on the system. It determines how a system must function. Boundaries and Interface A system should be defined by its boundaries. Boundaries are the limits that identify its components, processes, and interrelationship when it interfaces with another system. Each system has boundaries that determine its sphere of influence and control. The knowledge of the boundaries of a given system is crucial in determining the nature of its interface with other systems for successful design. We can touch and feel them. Physical System may be static or dynamic in nature. For example, desks and chairs are the physical parts of computer center which are static. Abstract systems are non-physical entities or conceptual that may be formulas, representation or model of a real system. Open or Closed Systems An open system must interact with its environment. It receives inputs from and delivers outputs to the outside of the system. For example, an information system which must adapt to the changing environmental conditions. A closed system does not interact with its environment. It is isolated from environmental influences. A completely closed system is rare

in reality. Adaptive and Non Adaptive System Adaptive System responds to the change in the environment in a way to improve their performance and to survive. For example, human beings, animals. Non Adaptive System is the system which does not respond to the environment. Permanent or Temporary System Permanent System persists for long time. For example, business policies. Temporary System is made for specified time and after that they are demolished. For example, A DJ system is set up for a program and it is dissembled after the program. Natural and Manufactured System Natural systems are created by the nature. For example, Solar system, seasonal system. Manufactured System is the man-made system. For example, Rockets, dams, trains. Deterministic or Probabilistic System Deterministic system operates in a predictable manner and the interaction between system components is known with certainty. For example, two molecules of hydrogen and one molecule of oxygen makes water. Probabilistic System shows uncertain behavior. The exact output is not known. For example, Weather forecasting, mail delivery. For example, social clubs, societies. In Human-Machine System, both human and machines are involved to perform a particular task. For example, Computer programming. Machine System is where human interference is neglected. All the tasks are performed by the machine. For example, an autonomous robot. This system includes hardware, software, communication, data, and application for producing information according to the need of an organization. For example, automatic library system, railway reservation system, banking system, etc. Systems Models A schematic model is a 2-D chart that shows system elements and their linkages. Different arrows are used to show information flow, material flow, and information feedback. Flow System Models A flow system model shows the orderly flow of the material, energy, and information that hold the system together. Static System Models They represent one pair of relationships such as activity—time or cost—quantity. The Gantt chart, for example, gives a static picture of an activity-time relationship. Dynamic System Models Business organizations are dynamic systems. A dynamic model approximates the type of organization or application that analysts deal with. It shows an ongoing, constantly changing status of the system. Categories of Information There are three categories of information related to managerial levels and the decision managers make. Strategic Information This information is required by topmost management for long range planning policies for next few years. For example, trends in revenues, financial investment, and human resources, and population growth. Managerial Information This type of Information is required by middle management for short and intermediate range planning which is in terms of months. For example, sales analysis, cash flow projection, and annual financial statements. Operational information This type of information is required by low management for daily and short term planning to enforce day-to-day operational activities. For example, keeping employee attendance records, overdue purchase orders, and current stocks available.

Systems design phase: The specifications of the present system are studied to determine what changes will be needed to incorporate the user needs not met by the system presently. The output of this phase will consist of the specifications, which must describe both WHAT the proposed system will do and HOW it will calendrierdelascience.com the proposed system.

The foremost ultimate thank you goes to my determined and ever encouraging computer studies teacher MR. No words can explain my gratitude for your ever helping hand through this process. In conclusion, the system analyst will ever treasure the help from both mentioned and non-mentioned well-wishers deeply in his heart. System analysis 2 Problem definition The current manual system The proposed system Fact finding report. System design 3 3. System testing and debugging 1. The seven months provided by the Kenya national examination council enabled the system analyst recognize and define the problem in the current manual system at the hotel. After an information gathering process from several hotels managed by manual and computerized systems, the system analyst saw that the hotel indeed needed a computerized management system. After a close analysis of samples collected during the problem definition stage the analyst found that all the hardware and software requirements needed for implementation and maintenance of the system are readily available in the market and cheaply affordable by the hotel. The system was carefully designed to ensure maximum efficiency of the system at the hotel. The system was skillfully and carefully coded to seal any possible loopholes in the system. The system was developed using visual basic for applications Microsoft access language. ABC Hotel offers accommodation, meals, additional facilities and other services. Accommodation services are offered as follows: Breakfast; Lunch, dinner, tea, Laundry, Ironing, transport and room service. The services are offered as outlined below: Due to huge losses suffered by the hotel from the frequent errors in the current system, the hotel management opted for a computerized system, which would: Be friendlier to customers and the staff. Improve customer care and service at the hotel. Increase the hotel performance. Reduce the operational costs of the hotel. This delays information transmission in the hotel. Booking is done through phone calls or through visit to the hotel booking office. On the reporting date the file is transferred to the reception. On checking in the guest is given the key to his allocated room, he also specify if he needs room service. Here the guest pays accommodation and meals fee. The accounts department generates the bills on daily basis and delivered to the guests in their rooms at dusk by the service maids. The guest pays at the accounts desk, where the receipts are generated. For a one meal customer the bill is generated immediately after ordering and he pays at the accountant desk before leaving. During checking out of guests, their expenditure outlines are generated a day before check out date. The guests receive their outlines at the accounts desk as they check out, where they pay for bills balances if any. Difficulty in location of guest files: Human and computational errors: This leads to security problems at the hotel such as armed robberies. Difficulty in data analysis: No reliance on computer devices which may fail since they are machine in nature. Relatively low running costs as the system requires no electricity, internet services as the computerized system would. Guest files can easily get lost or mix up with other guest file documents. Files occupy a large storage space 3. Unnecessary duplication of data. Files are prone to theft unauthorized modification due to low data security levels and standards. Due to easy access to guest data by unauthorized users, guest data is extremely unconfident. Retrieval of guest records is extremely difficult. Data entry procedure is prone to errors. Guest records are extremely difficult to modify since modification generates dirty and unpresentable reports. To enable automated data entry methods. Ensure efficient and reliable communication within the hotel. Avoid data entry errors by use of input masks. Enable easy authorized modification of data. Enforce security measures to avoid unauthorized access to guest records. Enable fast and easy retrieval of guest records and data for fast reference activities. The system will cover; booking, accommodation, meals, and accounts details. Moreover, special services such as laundry, ironing and room service will be automated by the system also, not to forget the additional facilities information that will be efficiently handled by the system. To help the system smoothly carry out its intended purpose to meet the hotel management needs, the following tables will

be used to store data: For booking, the system will give room for online booking, personal visit to the booking office, telephone calls or facsimiles. For personal visit to the hotel, the guest provides his details verbally which the booking staff enters into the computer system. The table has the following fields: The table contains the accommodation details of a guest. These details help 6 ABC uniquely identify the guest with his room and services offered for the room. Admission table The table contains guest details input on admission of the guest into the hotel at the reception. This information keeps track of the duration that the guest has stayed at the hotel. If the guest intends to stay for more than a day, he has to book in for accommodation in advance; else, his information will be input into the system at the reception. The guest luggage information is entered in the system to ensure maximum security of luggage at the hotel. For this to become a reality, the following fields have been used: Meals table The table contains the hotels catering transactions information. This information is vital as this department is the backbone of any hotel aspiring to achieve its goals and realize its maximum potential. The table contains the following records: The system will enable automatic calculation of the total amount charged for the meals offered to guests. Room service refers to provision of meals to guests in their rooms. The table contains laundry details for clothes washed at the hotel laundry. The table contains the following fields date, fname, sname, regno, id card no, linen, type, charges, rcpt no, payment, Nationality, Number of clothes, Amount charged, Total amount 6. Ironing table This table contains the ironing service information for the clothes washed both at the hotel and outside the hotel. Payment is done on clothes that are washed outside the hotel. Clothes washed at the hotel laundry are not charged. The table contains the following fields Total amount, Amount charged, Number of clothes, payment, Rcpt no, charges, type, linen, Nationality, id card no, sname, fname, regno, date 7. The table contains information of the transport services offered to the guests at an extra cost. The guest is charged depending on the type of vehicle used. Ambulance table The table contains information on the ambulance facility services offered by the hotel to local, foreign individuals and groups. The table stores information on charges and can be used to generate detailed reports on request by the management. The following fields aid the table efficiently and reliably perform its functions to the expectations: This is a facility table that contains information on the conference facility services offered to the customers at an extra cost. The following are the fields that help the table fulfill its purpose at the hotel: Swimming pool facility table. Swimming pool facility table contain information on the swimming facility services offered o customers at an extra cost. The table can be used to generate reports on the daily activities in the swimming department, on request by the management. The table has the following fields to enable it perform the above described functions: The table holds their information safely and ensures maximum data integrity values. To enable the table accomplish its intended purpose successfully, the table contains the following fields date, Rcpt no, Total amount, payment, charges, duration, facilities, sport activity, Nationality, regno, sname, fname, type Employees details table The table contains valuable and delicate information about the employees. The table is for use by the hotel management to keep track of the employee records and performance at the hotel to enable the hotel realize its maximum potential and reduce any possible irrelevant expenditure. The table has the following fields that enable it ensure maximum operability and co-operation residence, mobile no, account no, salary, position, department, position, office tel, office number, email, address, contacts, id card no, staff names, staff no 8 ABC 2. The system enables easy and fast access to the guest files. The system provides better data management facilities. The system enable online booking of guests into the hotel hence international guests can easily book into the hotel. The system provides performance evaluation of the employees to ensure maximum output from the employees. The system help reduce the congestion of guests ensuring best service output for customer satisfaction purposes. Easy update of the guest records. High customer service standards attract more guests to the hotel. Reduction 0of data entry and processing errors.

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Systems Analysis and Design (SAD) is an exciting, active field in which analysts continually learn new techniques and approaches to develop systems more effectively and efficiently. However, there is a core set of skills that all analysts

need to know no matter what approach or methodology is used.

Chapter 9 : System Analysis and Design Overview

A Decision Table Example Table below is an illustration of a decision table developed using the steps previously outlined. In this example a company is trying to maintain a meaningful mailing list of customers.