

CH 1

<Key Terms Checkpoint>

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<Review Questions>

1-1. Information systems analysis and design is the process of developing and maintain an information system. 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.

1-2. System thinking is an ability of analyzing and understanding the relationship between several components of an organization. It is one of the most important analytical skills. System thinking provides a framework from which to see the important relationships among information systems, in the organizations where they exist, and in the environment where the organizations themselves exist. Computer-based system may help to apply system thinking. Computer-based system can analyze the inputs and outputs provided by the unit in a better way.

1-3. Decomposition is the process of breaking the description of a system down into small components. Coupling is the extent to which subsystem depend on each other. Cohesion is the extent to which a system or subsystem performs a single function.

1-4. System is the group of interrelated procedures that are performed in a defined boundary set to serve the same performance in whole. Organization systems is same. Organizations consist of several interrelated components that work together to achieve similar goals. For this, the components may use stored information as input, process them and provide respective outputs to their environments.

1-5. System Development Life Cycle(SDLC) is the series of steps used to mark the phases of development for an information system. SDLC is consists of four phases. 1. System planning and selection, 2. System Analysis, 3. System Design, 4. System implementation and operation.

First, System planning and Selection is the first phases of the SDLC, in which an organization's total information system needs are analyzed and arranged, and in which a potential systems project is

identified and an argument for continuing or not continuing with the project is presented. In this phase, system analyst prioritizes and translates the needs into a written plan for the information systems department.

Second, System Analysis is the second phases of the SDLC in which the current system is studied and alternative replacement systems are proposed. In this phase, system analyst(SA) determining the requirements of the system. After studying the requirements, SA structures them according to their relationships and eliminates any redundancies.

Third, System Design is the third phase of the SDLC in which the system chosen for development in systems analysis is first described independently of any computer platform(logical design), and is then transformed into technology specific details(physical design) from which all programming and system construction can be accomplished.

Fourth, Systems implementation and operation is the final phase of SDLC, in which the information system is coded, tested, and installed in the organization, and in which the information system is systematically repaired and improved.

1-6. Prototyping is building a scaled-down version of the desired information system. Although the prototype is not the actual product, but still it is a working model and one can easily justify whether or not the proposed system would work well, with the help of a prototype.

1-7. CASE is 'Computer-aided software engineering'. They are software tool that provide automated support for some portion of the systems development process. In general, CASE assists systems builders in managing the complexities of information system projects and helps ensure that high-quality systems are constructed on time within budget.

Repository design is the approach of designing an information system with active participation of all developers, analysts and users, to assure whether or not, all the documented requirements are achieved well.

1-8 JAD is 'Joint application development'. It is system methodology created to radically decrease the time needed to design and implement information systems.

Participatory design, which called 'PD', is a systems development approach that originated in northern Europe, in which users and the improvement of their work lives are the central focus. PD emphasizes the role of the user much more than do traditional North American techniques.

1-9. Joint application design, which called JAD, is a structured process in which users, managers, and the analysts work together for several days in a series of intensive meetings to specify or review system requirements. Some phases followed in the traditional SDLC are also followed in RAD, but

the phases are combined to produce a more streamlined development technique. Planning and design phases in RAD are shortened by focusing work on system functional and user interface requirements at the expense of detailed business analysis and concern for system performance issues. Also, usually RAD looks at the system being developed in isolation from other systems, thus eliminating the time-consuming activities of coordinating with existing standards and systems during design and development.

1-10. Agile methodologies are family of development methodologies characterized by short iterative cycles and extensive testing; active involvement of users for establishing, prioritizing, and verifying requirements; and a focus on small teams of talented, experienced programmers.

CH 2

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<Review Questions>

2-1 There are 6 sources of software. (1) information technology service firms, (2) packaged software providers, (3) vendors of enterprise solution software, (4) cloud computing, (5) open-source software, (6) in-house development.

Information technology service firm mainly depend on purchasing the software from the reputed software development companies. When the firm give constraints of what the exact product/project they need, the technical team designs the software. In this case, IT firms is used if task requires custom support.

When it comes to Packaged software providers, customer(other companies) will specify the needs of the company and ask for the development of the software. By understanding the needs and requirements of the firm, the developer will develop the package software. In this case, these are used if the task is generic.

When it comes to vendors of enterprise solution software, the entire requirement of the firm will

be maintained at one door step. In enterprise solution, the firm database will be created and at each level modules will be created for entering the data. After the data collection is completed from each module the software will automatically closes the ticket. In this case, the total package has to be given to outside vendor for development.

Cloud computing is no need of developing the software or hardware for the firm. Everything will be maintained in virtual space. What is needed is just to have the internet access or virtual private networks for maintaining the applications. In this case, this is used for quick response to the applications which are tough in real time.

When it comes to open-source software, developer can have any type of scripts which are available in the internet that best fits to firm's program. This case is good if the task is generic but issue with cost.

In-house development use general required software scripts and codes which are very frequently available in markets are needed. In this case, internal staff is necessary with variations in size.

2-2. There are several criteria for choosing off-the-shelf software package. There are cost, Functionality, vendor support, viability of vendor, flexibility, documentation, response time, ease of installation.

2-3. Request for proposal, which called RFP, is a document provided to vendors to ask them to propose hardware and system software that will meet the requirements of a new system. After all the detailed explanation was given to the vendor, vendor will look after for the necessary hardware and software requirements for the product development. After all the implementation, the vendor show the product for display, there the vendor need to conduct all the possible operation that are required and among them the user choose the best suits for his needs.

2-4. If any vendor claims about the software application, system analyst can test the software by running scripts and codes so that if any problem exists, he can fix and make changes. Also, he can compare the views of other uses who are using the same software.

2-5. Enterprise resource planning, which called ERP, is a system that integrates individual traditional business functions into a series of modules so that a single transaction occurs seamlessly within a single information system rather than several separate systems. The benefits of ERP include a single repository of data for all aspects of a business process and the flexibility of the modules. A single repository ensures more consistent an accurate data, as well as less maintenance. However, there are som disadvantage too. The systems are complex, so they must rely on consultants or employees of the software vendor, which can be expensive. In some cases, organizations must change how they do business in order to benefit from a shift toward enterprise solutions.

2-6 Reuse is the use of previously written software resources, especially objects and components, in new applications. Benefits of reuse is like this. Reuse should increase programmer productivity and also decrease development time, minimizing schedule overruns. However, there are disadvantages too. Reuse has its own limitations one such limitation in terms of flexibility and Many a time programmers' find reuse of software to be very complex. Also, extension of domain uses is not feasible.

2-7. There are four types of reuse. Ad hoc reuse, facilitated reuse, manages reuse, designed reuse.

By using ad hoc reuse, individuals are free to find or develop reusable assets on their owns, but fuw, if any, organizational rewards are offered reusing assets.

By using facilitated reuse, the developers are not required to practice reuse, but they are encouraged to do so. The organization makes available some tools and techniques that enable the development and sharing of reusable assets, and one or more employees may be assigned the role of evangelist to publicize and promote the program.

By using managed reuse, development, sharing and adoption of reusable assets are mandated; organizational policies are established for documentation, packaging, and certification.

By using designed reuse, reuse is mandated; policies are put in place so that reuse effectiveness can be measured; code must be designed for reuse during initial development, regardless of the application it is originally designed for; there may be a corporate office for reuse.

2-8. By using the cloud computing method the developers of the IT person can accesses the task very faster for computing and the work stress for IT developers can be reduced and can also limited the requirement of IT internal staff.

CH 3

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<Review Questions>

3-1 The advantage of an organizational undertaking an information is like this. The organization gets an opportunity to solve business problems as information systems reduces the operational time and supplies better results and the information system provides better way of communication or customer services with the use of the latest information technologies.

3-2. Various common skills of a project manager are project management, leadership, technical, conflict management, customer relationship. I think the most important skill is leadership. Project management, customer relationships and other can be replaced by other people but leadership cannot be replaced by someone.

3-3. In project initiation phase, project manager firstly establish the project initiation team and establishing a relationship with the customer. Next, establish the project initiation plan and establish the project management procedures. Finally, project manager have to establish the project management environment and project workbook and developing the project charter.

3-4. In project planning, project manager firstly describe project scope, alternatives and feasibilities an dividing the project into manageable tasks. Next, project manager have to estimate resources and create a resource plan. Next, develop a preliminary schedule and developing a communication plan. Finally, project manager have to determine project standards and procedure and identifying and assessing risk.

3-5. In project execution, project manager firstly execute the baseline project plan and monitor project progress against the baseline project plan. Next, project manager have to manage changes to the baseline project plan and maintain the project workbook. Finally, project manager have to communicate the project status.

3-6. (1) Written communication: when use this, project team needs to share reports which are daily or weekly. written communication is good when if project team wants to provide a statistical data of the completion of tasks of a project with neat and clean graphical representation to the end customer.

(2) Oral communication: This method is often used when once the project team has sent the reports of the projects to the end customer. Team members must know about the changes or modifications.

(3) Face to face communication: This method is efficient when if the project manager goes to local place and can communicate directly with the end customer. It is easy to understand what requirements of the end customer are and also he is able to tell about the policies of his organization.

(4) Online communication: Project manager can share the reports and inputs which are required to complete the task to the end customer.

3-7. In project close-down, project manager have to close down the project and conducting post project reviews. Finally, project manager close the customer contact.

3-8.

- The project can be completed in the shortest time possible

- It contains all the important activities required for the project to be completed.

- It contains all the important processes required for the project.

- A project becomes a critical path if it saves time thus reduces cost.

3.9 To summarize briefly making gantt chart is like this.

(1) Identification of various activities in the project

(2) estimate the time for completion of each task and calculate expected completion time

(3) Put the task in an order and follow precedence relationships among the tasks

(4) Combining the estimated times and precedence of the activities

3-10. To summarize briefly making network diagram is like this.

(1) Identifying and collection of tasks.

(2) Find the precedence tasks

(3) estimate the duration

(4) Calculating the slack time

3-11. The project planning is generally occurring in second phase of the SDLC and the project management is needed in all phase of the SDLC.

3-12. The reason for precedence is dependency of the activity on the previous activity. The previous activity becomes the provider for the activity to be continued without the completion of the precedent activity, the second activity cannot be completed.

CH 4

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<Review Questions>

4-1 There are three different steps in the process of identifying and selecting the project.

- (1) Identifying potential development projects
- (2) Classifying and ranking information system development project
- (3) selecting information system development project

4-2. There are several project evaluation criteria like availability of resources(different types of resources that are used to complete the project), Value chain analysis(the extension of costs and values of tasks in the process of developing outcomes of projects), strategic alignment(the project view and alignment should be in strategic manner), size and duration of the project(project should be completed within the time with the completion of all individual tasks), potential benefits(benefits can be either profits of project and views of customer services), risks and technical difficulties(need to identify project risks and overcome the difficulties to complete the project within the time)

4-3. Steps in project initiation and planning process

- (1) Establishing the project initiation team: This helps in forming the team with the help of good team efficiency and determination in executing the project is increased.
- (2) Establishing a relationship with the customer
- (3) Establishing the project initiation plan

(4) Establishing management procedures: Project managers have to create task structure and should assign the work to the developers.

(5) Establishing the project management environment and project workbook

4-4. Baseline project plan contains introduction, description, feasibility, management. The content and format of the baseline project plan are different for each stakeholder, because it is based on level of the stakeholder in the organization.

4-5. There are three commonly used methods for performing economic cost-benefit analysis: (1) net present value(used for determining and comparing profitability in the investment), (2) return on investment(the ratio of receipts of net cash of the project and the outlays cash of the project is known return on investment), (3) break-even analysis(used to determine the point where the net profit of the company becomes zero, as the value of total revenues is equal to the value of total expenses)

4-6. There are several types of project feasibility factors: economic feasibility, operational feasibility, technical feasibility, schedule feasibility, legal and contractual feasibility, political feasibility. Economic feasibility is important in initiating and planning phases because by using economic feasibility, user can evaluate both profit and loss, costs of the projects.

4-7. There are potential risks involved with improper assessment of technical risks.

- Project is stalling because of technique failures

- Increase of maintenance costs due to technical issues

- Results in customer dissatisfaction

4-8. Project benefit can be categorized into two concepts. Tangible benefit(reduction of errors, reduction of cost etc.) and intangible benefit(increased organizational flexibility and employee morale etc.)

4-9. Intangible benefits: competitive necessity, increased organizational flexibility, increased employee morale, promotion of organizational learning and understanding, more timely information

4-10. The concept of the time value of money shows the differentiation between the invested money to the expected returns in future. When user invests the money, the cost variation may increase because the dollar value in the market will vary from day to day. This shows the variation for the time value of money.

4-11. The structured walkthrough is the project module will be maintained in stepwise manner and at each stage the process flow will be tested by the individual tester. Needed roles are : coordinator,

presenter, user, secretary, standards bearers, maintenance oracle

CH 5

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<Review Questions>

5-1. System analysis is second phase of SDLC that deals with information gathering, analysis and it's processing to create basic idea or structure of required system. This phase can be divided into two subsystems: determining system requirement and structuring requirement.

5-2. There are several required traits of system analyst: impertinence, impartiality, relaxing of constraints, attention to details, reframing

5-3. Traditional methods of information gathering: (1) interviewing(better when people are reliable and when time of analysis is not much) (2) observing workers(better when user cannot rely on users for proper information) (3) Analysis of business documents(always reliable and have to be checked everytime)

5-4. General guidelines for interview:

- plan the interview

- be neutral

- listen and take notes

-review notes

-seek diverse view

5-5. General guidelines for observing:

-Direct observation makes the analyst more confident and secure as gathering of information by this method is done under his own observation.

-Analyst measures behavioral details of the workers about their views and behavior towards work and the system.

5.6. General guidelines for analyzing documents:

-When analyzing documents, it is important to understand both formal and informal systems because each provide insight into information requirements and what is necessary to convert from present to future systems.

5-7. Observation can be opted when users are not reliable and cannot be believed with their answers given at the time of interview. Document analysis, however, is much better option as it doesn't have to do anything with the people. Observation is useful where people cannot be trusted on the answers provided by them in the interview. Document Analysis is useful where observation and interview cannot be effective.

5-8. Joint application development, which called JAD, is a modern approach of information gathering in which most of the key members are involved in the discussion. JAD can be better than traditional methods as it involves all the key members of the organization in the discussion. Weakness of JAD is hectic schedule and time consumption.

5-9. Computing helps the form of CASE tools and prototyping. CASE tools are used for creating diagrams. Prototyping is defined as the activity of making prototypes of any application which means to develop the model before the actual system is installed.

5-10. Prototype during requirements determination helps users in determining the functionality and features in the final system. Prototyping is better than traditional methods where system requirements are not well defined. It is beneficial when few users are involved and where creating designs maybe complex.

5-11. In order to perform BPR, main thing is identification of key processes of business because the key processes of business are the processes or a structured set of activities or procedures that has to be followed in order to provide a customer with effective and reasonable specific output which the user demands from the system.

5-12. Disruptive technologies are technologies that enable the breaking of long-held business rules that inhibit organizations from making radical business changes. By eliminating various old and previously imposed rules and procedures that do not allow organization to introduce innovative ideas and latest technologies, disruptive technologies can change their business process radically.

CH 6

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<Review Questions>

6-1. Data flow diagram(DFD) is a graphic that illustrates the movement of data between external entities and the processes and data stores within a system. DFD help system analysts in modeling the data flow and how data come to be stored at specific locations.

6-2. For source and sink, data cannot move directly from source to sink. For process, no process can have only output or input. For data store, data enter into data store only if it is received from a process directly and not from source or other data store. For data flow, data flow should be in one direction between symbols.

6-3. Decomposition is a process of reducing the single system to move more than single component processes. Balancing is a decomposition of process into different level such that the input and output of the decomposed process remains same as before decomposition. In order to find unbalanced structure, it is needed to find the input and output of the process in the context diagram. If they are same as in the level 0 decomposition, then the system is balanced else it is unbalanced.

6-4. The naming in a DFD is done as it is known that a system can be decomposed into number of processes. The naming is also done in ways or levels in which a DFD is decomposed.

6-5. DFD can work as the tool of the analysis because it helps in determining if the system model is complete or not. It allows to analyst to check the internal consistency of model and allows him to generate and generate models.

6-6. There are some rules when to stop decomposition. Decomposing can be stopped when

- Each process appeared is a single decision or a single database operation, such as retrieve, update, create and delete.

- Each data store appeared is on decomposition represents data as a single entity.

- User does not need anymore details to be shown, or when analyst have documented enough details to perform system development task.

6-7. The source represents the place from where the data coming into the system and the sink represents the place to which the data leaving the system. A source or sink may consists another organization that can send or receive the data to and from the system being analyzed. Also A source or sink may consists a person who interacts with the system or is supported by the system and another system with which the information is being exchanged.

6-8. Some unique rules applying to drawing context diagrams.

- Context diagram is a basic or initial diagram of a system.

- The source and sink is used for representing the boundaries of the environment of systems.

-No process can have only input. If an object has only input, it is sink.

6-9. DFD consistency is the extent to which information contained on one level of a set of nested data-flow diagrams is also included on other levels. Example of consistency violation can be like data flow that appears on level 1 as input to process but is not present in level 0 diagrams.

6-10. DFD completeness is the extent to which all necessary components of a data-flow diagram have been included and fully described. Example of completeness violation would be if DFD contains data flows that do not lead to anywhere or data stores and processes that are not connected to anything else.

6-11. DFD provides no information about the required estimated time that would take in data flow. The timing of the flow of data can change as per the flow congestion and cannot be constant. Hence, DFD has no indication about how much time would be needed in a data flow.

6-12. DFD show how actually the system is working what are the inputs required and what processes are done to process inputs and what is the output. It allows the analyst to identify the areas where the system works inefficiently. Analysts can then modify the system according to the required changes in order to improve the efficiency and perform business process reengineering and create a new system model.

6-13. Steps creating a decision table

(1) Naming conditions and assuming values for each conditions

(2) Naming all possible actions

(3) Listing all possible rules

(4) Defining action for each rule

(5) Simplify the decision table

To reduce the size and the complexity of decision table, a different, linked decision table can be used. This table allows us to break the complex table created initially into more than one separate table which is linked with the main table.

6-14. To calculate the number of rules a decision table, it needed to simply calculate the number of values that can be with every condition and multiply the number of values for every condition by the number of values for any other condition.