



Republic of the Philippines

Department of Education

REGION III

SCHOOLS DIVISION OFFICE OF NUEVA ECija

LEARNING ACTIVITY SHEET

SPECIAL PROGRAM IN ICT 10

INFORMATION SYSTEM AND RESEARCH 10

Third Quarter, Week 3

Name of Learner: _____

Date: _____

Grade Level /Section: _____

SYSTEMS DEVELOPMENT LIFE CYCLE

BACKGROUND INFORMATION FOR LEARNERS

The Systems Development Life Cycle (SDLC) describes the processes involved in building an application, ranging from the planning phase to the deployment and maintenance phase. It explains the various stages of a software cycle and the structure in which these stages are carried out. The result produced from each stage is implemented in the next stage of the software life cycle.

SDLC is a series of steps or phases that provide a model for the development and improvement of an existing or a new application or piece of system with the help of information technology. For example, creating an e-commerce website or an application for an already existing business to increase the profits.

STAGES OF SYSTEMS DEVELOPMENT

SYSTEMS PLANNING

Systems Planning is the first phase of SDLC. During the planning phase, the objective of the project is determined and the requirements of the system are considered. The planning phase is the most essential aspect of the Software Development Process. In this phase, business analysts, project managers, and domain experts compile and analyze business requirements. This would cover formulating a timetable with target goals, calculating labor and material costs, and establishing the project's teams and leadership structure.

A feasibility study is conducted on the proposed project in the planning stage. If there is no other viable alternative, the information is assembled into a project plan and presented to management for approval. Finally, a Requirement Specification document is created which serves the purpose of guideline for the next phase of the model.

SYSTEMS ANALYSIS

This is the second phase of SDLC where the entire system is defined in detail. During the analysis stage the project team determines the end-user requirements. Often, this is done with the assistance of client focus groups, which provide an explanation of their needs and what their expectations are for the finished system and how it will perform. Alternatives are generated and evaluated to check if they meet the requirements. The project team documents all of the user requirements and needs and gets a sign-off from the client and management to move forward with system design.

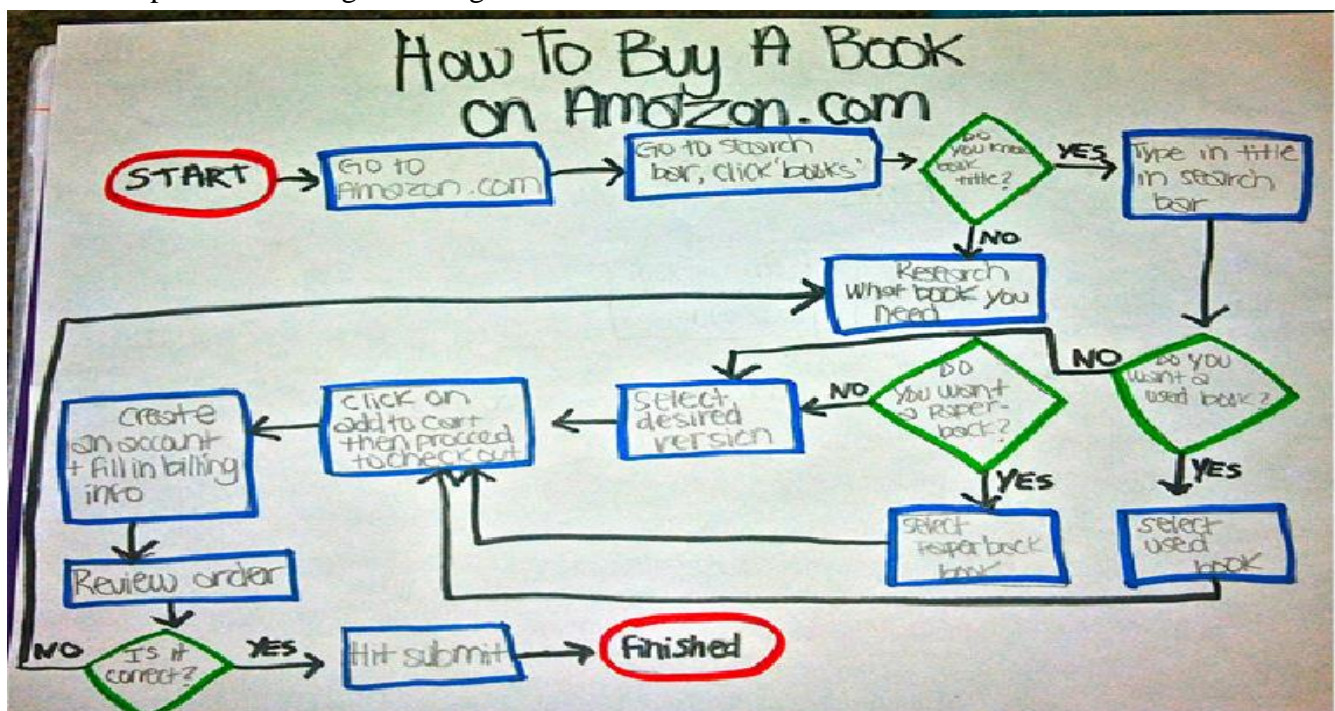
It is on this stage wherein a detailed blueprint of various processes of the software is developed. If needed, the system is divided into smaller parts to make it easier, more manageable for the developers, designers, testers, project managers and other professionals who are going to work on the software in the latter stages.

SYSTEMS DESIGN

The design phase is the “architectural” phase of the SDLC. The flow of data processing is developed into charts, and the project team determines the most logical design and structure for data flow and storage. The physical system is designed with the help of the logical design prepared by system analysts. The analyst and designers work together and use certain tools and software to create the overall system design, including the probable output.

The system software design is prepared from the requirement specifications which were studied in the first phase. System Design helps in specifying hardware and system requirements and also helps in defining the overall system architecture. The work is divided in modules/units and actual coding is started. Since, in this phase the code is produced, so the main focus is on the developer.

Example of basic Logical Design of client side user interface of an e-Commerce website.



SYSTEMS IMPLEMENTATION

Once the system is built, before it is released for general use, it is tested against the requirements to make sure the product is actually solving the needs addressed and gathered during the requirements phase. During this phase, unit testing, integration testing, software testing, acceptance testing are done. If runs smoothly without any flaw, then it is considered ready to be launched. After successful testing, the product is delivered/deployed to the customer for their use. The system is documented and the users are trained for the use of the new or the upgraded system.

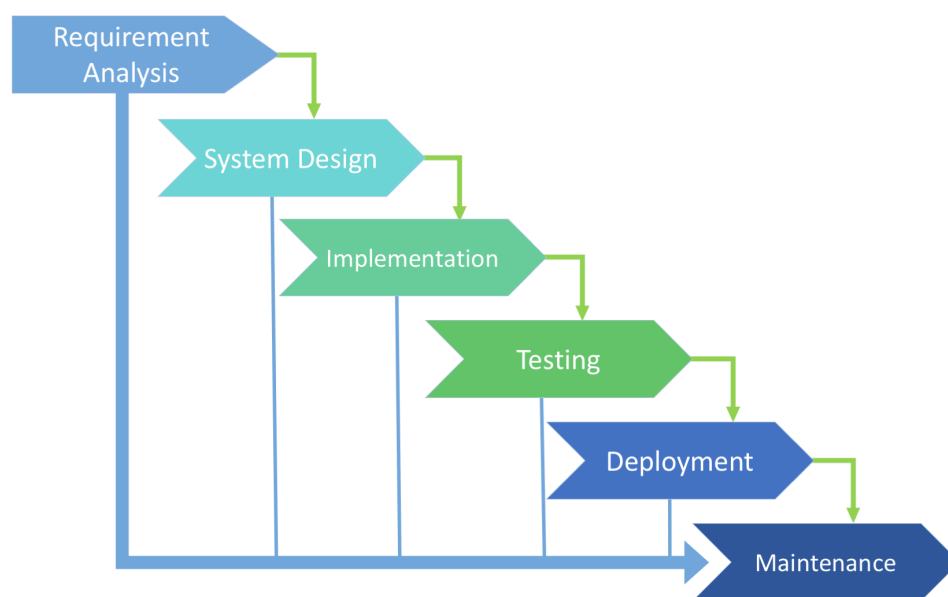
SYSTEMS MAINTENANCE

Systems support and security provides a vital protection and maintenance for the system. The emphasis during this phase is to ensure the system continues to perform according to specifications. Routine hardware and software maintenance and upgrades are performed to ensure effective system operations. User training continues, during this phase, as needed, to acquaint users to the system to introduce new features to current users. Additional user support and technical support is provided, as an ongoing activity, to help resolve reported problems. The support and security group implements and monitors physical and electronic security hardware, software and procedures. From time to time, the system is repaired and monitored against any malwares and other potential threats.

SDLC MODELS

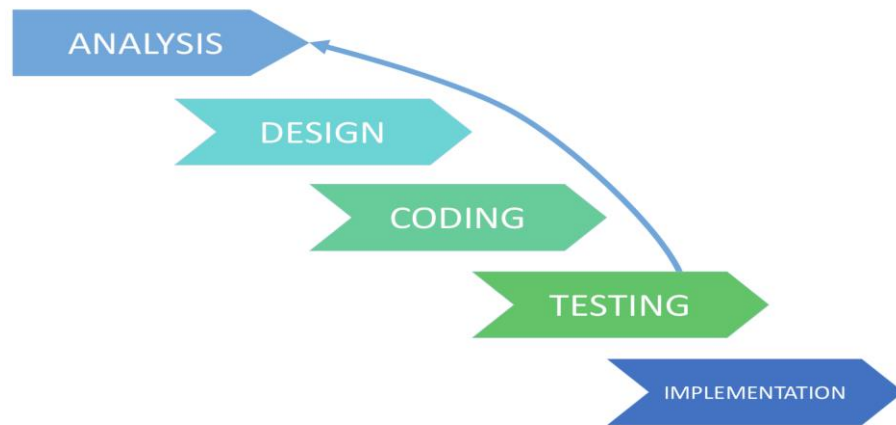
WATERFALL MODEL

A cascade SDLC model, in which development process looks like the flow, moving step by step through the phases of analysis, projecting, testing, implementation and support. This SDLC model includes gradual execution of every stage completely. Each phase must be completed before the next phase can start. This process is strictly documented and predefined with features expected to every phase of this systems development life cycle model.



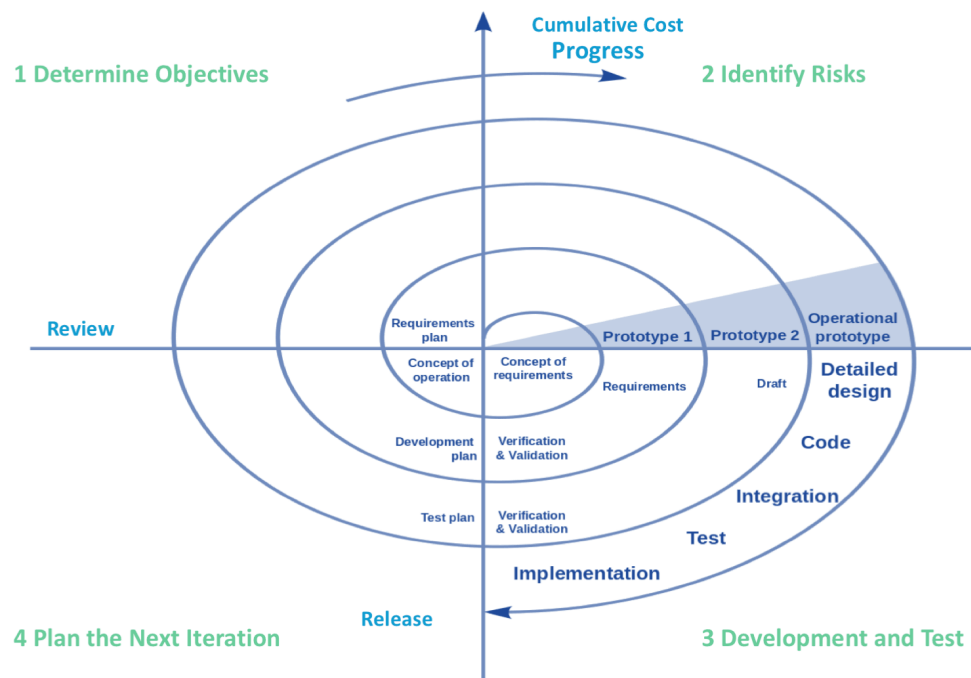
ITERATIVE MODEL

Iterative process starts with a simple implementation of a small set of the software requirements and iteratively enhances the evolving versions until the complete system is implemented and ready to be deployed. This model breaks down the development process of a large software application into smaller pieces. Moreover, it focused on simplifying initial implementation, which progressively gains more complexity and a broader feature set until the final system is complete.



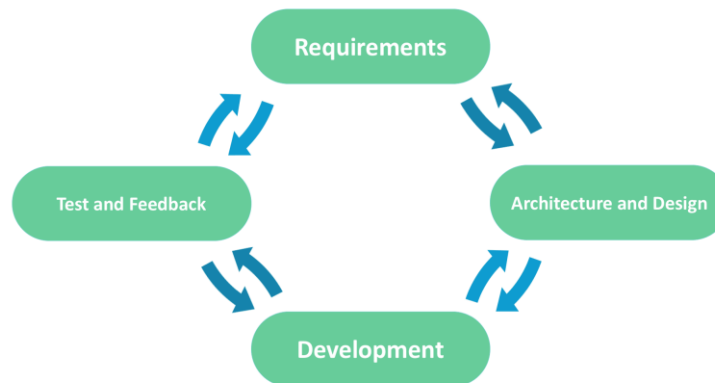
SPIRAL MODEL

Spiral Model is a risk-driven software development process model. It is a combination of waterfall model and iterative model. Spiral Model helps to adopt software development elements of multiple process models for the software project based on unique risk patterns ensuring efficient development process. The main issue of the spiral model – is defining the right moment to make a step into the next stage. The preliminary set time frames are recommended as the solution to this issue. The shift to the next stage is done according to the plan, even if the work on the previous stage isn't done yet.



AGILE MODEL

Agile SDLC model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product. Agile Methods break the product into small incremental builds. These builds are provided in iterations. Every iteration involves cross functional teams working simultaneously on various areas. At the end of the iteration, a working product is displayed to the customer and important stakeholders. Agile model believes that every project needs to be handled differently and the existing methods need to be tailored to best suit the project requirements. In Agile, the tasks are divided to time boxes (small time frames) to deliver specific features for a release. Iterative approach is taken and working software build is delivered after each iteration. Each build is incremental in terms of features; the final build holds all the features required by the customer.



LEARNING COMPETENCY

Describe each phase in SDLC and identify its activities

ACTIVITIES

ACTIVITY 1

Direction: Identify the stage of systems development being described by the following statements:

- _____ 1. The emphasis during this phase is to ensure the system continues to perform according to specifications.
- _____ 2. The entire system is being defined in detail.
- _____ 3. The flow of data processing is developed into charts, and the project team determines the most logical design and structure for data flow and storage.
- _____ 4. The system is being tested against the requirements to make sure the product is actually solving the needs addressed.
- _____ 5. It helps in specifying hardware and system requirements and also helps in defining the overall system architecture
- _____ 6. The objective of the project is determined and the requirements of the system are considered.
- _____ 7. A detailed blueprint of various processes of the software is developed.
- _____ 8. A feasibility study is conducted on the proposed project.
- _____ 9. The support and security group implements and monitors physical and electronic security hardware, software and procedures.
- _____ 10. A Requirement Specification document is created which serves the purpose of guideline for the next phase of the model.

ACTIVITY 2

A. Identify at least two (2) advantages and two (2) disadvantages of the different SDLC models.

| SDLC Models | Advantages | Disadvantages |
|-------------|------------|---------------|
| Waterfall | | |
| | | |
| Iterative | | |
| | | |
| Spiral | | |
| | | |
| Agile | | |
| | | |

B. Give a specific example on how to use waterfall model. Write the name of the project and indicate the activities to be done from planning to implementation.

RUBRIC:

| CRITERIA/PERFORMANCE | Needs Improvement (1) | Fair (2) | Good (3) | Excellent (4) |
|--|-----------------------|----------|----------|---------------|
| The student delivers his/her ideas clearly. | | | | |
| The activities in each stages was properly discussed. | | | | |
| Explanation shows complete understanding of the waterfall model. | | | | |
| The design of the project was clearly stated. | | | | |

REFLECTION:

List down at least three things that you have learned and briefly explain how will it helps you in your study.

REFERENCES

[5 Phases of the Secure Software Development Life Cycle \(SDLC\) \(eccouncil.org\)](http://eccouncil.org)

[Five Stages of a Software Development Life Cycle – Gwentech Embedded](#)

[SYSTEMS PLANNING - SYSTEMS DEVELOPMENT LIFE CYCLE \(google.com\)](http://google.com)

[SDLC Models Explained: Agile, Waterfall, V-Shaped, Iterative, Spiral | Existek Blog](#)

[SDLC - Spiral Model - Tutorialspoint](#)

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