

## SEN 201 ASSIGNMENT

**Name:** EZERIBE CHRISTOPHER CHISOM

**Matric Number:** 24/15119

**Department:** COMPUTER SCIENCE

**Assessment:**

### 1.Ten (10) different software process models

- Waterfall Model
- Iterative Model
- V-Model
- Spiral Model
- Agile Model
- Incremental Model
- Rapid Application Development (RAD)
- Prototype Model
- Concurrent Development Model

➤ **WATERFALL MODEL:** This is a linear and sequential software development process approach just like a waterfall where each phase must be completed before the next one begins. It is best suited for projects with well detailed requirements.

➤ **ITERATIVE MODEL:** As the name suggests, it is a model that focuses on the incremental development, allowing for repeated modifications through cycles, providing accommodation for evolving requirements.

➤ **SPIRAL MODEL:** This model combines iterative development with risk management, emphasizing on continuous modification through repeated cycles which addressing each risks respectively.

- ✧ **AGILE MODEL:** It promotes adaptive planning and iterative development with frequent releases and customer collaboration enhancing flexibility.
- ✧ **V-MODEL:** This is an extended version of the waterfall model, it emphasizes on verification and validation at each development stage, ensuring high quality of development process.
- ✧ **INCREMENTAL MODEL:** It involves the development of software in increments, allowing partial implementation of software to be tested and refined at possible intervals.
- ✧ **RAPID APPLICATION DEVELOPMENT (RAD):** This model focuses on quick development and user feedback through iterative prototyping reducing the time to market
- ✧ **BIG BANG MODEL:** This is a less structured approach of software development where development starts without too much planning, it is usually used for small projects.
- ✧ **PROTOTYPE MODEL:** It is a software model used for prototyping. Prototypes are often used to collect feedback from users in the initial production stage, allowing for further improvement in refining the software.
- ✧ **CONCURRENT DEVELOPMENT MODEL:** This model allows multiple phases of development to occur at the same time, enhancing flexibility but it requires careful attention and coordination.

SOFTWARE PROCESS MODELS	STEPS INVOLVED IN EACH MODEL
<ul style="list-style-type: none"> <li>● Waterfall Model</li> </ul>	Design, Implementation, testing, development and Maintenance.
<ul style="list-style-type: none"> <li>● Iterative Model</li> </ul>	Repeated testing, Planning and design
<ul style="list-style-type: none"> <li>● Spiral Model</li> </ul>	Planning, Risk Analysis, Engineering and r

	repeated evaluation
• Agile Model	Concept, Incremental, Release and Production
• V-Model	Design, Requirements, Verification and Validation
• Incremental Model	Implementation in increments, Design and Requirements
• Rapid Application Development	User design and Construction
• Big Bang Model	Development, Testing and deployment
• Prototype Model	Gathering requirements and analysis, Quick design, refining prototype and initial user evaluation
• Concurrent Development Model	Planning, design & development, testing and integration

## CHARACTERISTICS, BENEFITS AND LIMITATION OF EACH SOFTWARE PROCESS MODEL

### Waterfall Model

- **Characteristics:** It is linear and sequential; each phase must be completed for moving to the next one.
- **Benefits:** This process model is simple to manage and has clear documentation.
- **Limitations:** It is inflexible to changes; late testing can lead to serious issues.

### Iterative Model

- **Characteristics:** Development can be done in increments; it allows for customer's feedback

- **Benefits:** It is flexible, early feedback from users.
- **Limitations:** It requires good project management.

### Spiral Model

- **Characteristics:** It focuses on risk management and iterative development.
- **Benefits:** Handles risks effectively and also allows user feedback
- **Limitations:** It is quite a complex process model and can be costly.

### Agile Model

- **Characteristics:** It emphasizes collaboration and flexibility; allows iterative cycles.
- **Benefits:** Rapid delivery and it is adaptable to changes at any time.
- **Limitations:** It is less predictable and involves the constant attention of stakeholders.

### V-Model

- **Characteristics:** Emphasizes testing at each development stage.
- **Benefits:** Early defect detection; structured approach.
- **Limitations:** It is rigid, requires complete requirements upfront.

## Incremental

- **Characteristics:** It separates the product into simpler parts which is delivered incrementally.
- **Benefits:** This process model reduces risk and allows partial implementation and testing.
- **Limitations:** There can be integration challenges as increment grows.

## Prototype Model

- **Characteristics:** It focuses on the user's feedback; involves creating a work model early.
- **Benefits:** Early detection of missing functionalities, reduces misunderstandings and enhances user involvement
- **Limitations:** It can be time-consuming, and might lead to incomplete analysis if not managed properly.

## Rapid Application Development (RAD)

- **Characteristics:** Keen on quick development and iteration based on user feedback.
- **Benefits:** It allows the fast delivery of prototypes, also with user involvement for satisfaction feedback
- **Limitations:** There is less control over project scope which can sometimes lead to incomplete system if not properly managed.

## Big Bang Model

- **Characteristics:** This process model is usually unstructured; no formal phases and development starts without a clear plan.
- **Benefits:** Simple to implement; useful for small projects with few requirements.
- **Limitations:** It poses high risk of failure; difficult to manage changes and testing is often inadequate.

## Concurrent Development Model

- **Characteristics:** It allows the simultaneous execution of tasks; emphasizing collaboration among teams.
- **Benefits:** Reduces time to market, allows for flexibility in requirements. It also allows better risk management
- **Limitations:** Its coordination can be complex and requires utmost attention and effective communication.