## Describe the process and characteristics of building a house following the waterfall way of working. Describe the advantages and disadvantages of building a house this way

Waterfall method is characterized by doing steps in sequential methods.

**Phases of Waterfall:**

1. **Requirements:**
   * **Activities:** Gather and document homeowner's needs and specifications.
   * **Deliverables:** Detailed requirements document.
2. **Analysis:**
   * **Activities:** Feasibility study and detailed requirements analysis.
   * **Deliverables:** Feasibility report and detailed specifications.
3. **Design:**
   * **Activities:** Create architectural blueprints and system designs.
   * **Deliverables:** Complete blueprints and system plans.
4. **Implementation:**
   * **Activities:** Construction of the house in a linear sequence.
   * **Deliverables:** Built sections of the house.
5. **Testing:**
   * **Activities:** Conduct inspections and quality checks.
   * **Deliverables:** Inspection reports and defect resolutions.
6. **Deployment:**
   * **Activities:** Final walkthrough and handover.
   * **Deliverables:** Completed house and documentation.

### Advantages:

1. **Clear Structure:** Well-defined phases make tracking progress easy.
2. **Comprehensive Documentation:** Detailed records at each phase.
3. **Discipline and Control:** Sequential approach enforces order.
4. **Predictability:** Clear timeline and budget.

### Disadvantages:

1. **Inflexibility:** Hard to make changes once a phase is completed.
2. **Late Testing:** Defects found late can cause significant rework.
3. **Assumption of Stable Requirements:** Not ideal for evolving needs.
4. **Limited Customer Feedback:** Few opportunities for input during construction.
5. **Sequential Dependencies:** Delays in one phase affect the whole project.

### Conclusion

The Waterfall model provides a structured and predictable approach to building a house but lacks flexibility and can be challenging if requirements change or issues arise late in the process.

## Describe the process and characteristics of building a house following the RUP way of working. Describe the advantages and disadvantages of building a house this way

**Phases of RUP:**

1. **Inception:**
   * **Goal:** Define scope, goals, and feasibility.
   * **Activities:** Initial meetings, feasibility study, preliminary plans, and risk assessment.
   * **Deliverables:** Vision document, preliminary project plan, risk assessment.
2. **Elaboration:**
   * **Goal:** Refine requirements and address risks.
   * **Activities:** Detailed requirements gathering, design, feasibility studies, and risk assessment.
   * **Deliverables:** Detailed requirements document, complete designs, updated risk assessment, detailed schedule, and budget.
3. **Construction:**
   * **Goal:** Build the house iteratively.
   * **Activities:** Iterative construction, continuous testing, inspections, and adjustments.
   * **Deliverables:** Completed sections, inspection reports, progress updates.
4. **Transition:**
   * **Goal:** Finalize construction and ensure quality.
   * **Activities:** Final inspections, defect resolution, homeowner training, and documentation.
   * **Deliverables:** Final inspection reports, user manuals, final project documentation.

### Advantages:

1. **Iterative Development:** Continuous refinement reduces major issues.
2. **Risk Management:** Early risk identification and mitigation.
3. **Flexibility:** Adapts to changes throughout the project.
4. **Continuous Feedback:** Regular testing and inspections ensure quality.
5. **Stakeholder Involvement:** Regular communication with the homeowner.

### Disadvantages:

1. **Complexity:** Iterative approach can be harder to manage.
2. **Resource Intensive:** More frequent planning and testing increase costs.
3. **Potential for Scope Creep:** Continuous changes can expand project scope.
4. **High Initial Planning Effort:** Requires detailed early planning.
5. **Documentation Overhead:** Ongoing documentation can be time-consuming.

### Conclusion

Using the RUP method for building a house provides flexibility, continuous improvement, and robust risk management but requires careful management to handle complexity, resource demands, and scope control.

## Describe the process and characteristics of building a house following the SCRUM way of working. Describe the advantages and disadvantages of building a house this way

**Scrum Process:**

1. **Product Backlog:**
   * **Activities:** List all requirements and features of the house in a prioritized backlog.
   * **Deliverables:** Product backlog with user stories (e.g., "As a homeowner, I want a kitchen with modern appliances").
2. **Sprint Planning:**
   * **Activities:** Plan short, time-boxed iterations (sprints) where specific backlog items are selected to be completed.
   * **Deliverables:** Sprint backlog with tasks for the upcoming sprint.
3. **Sprints:**
   * **Activities:** Construct parts of the house in iterative cycles, typically 2-4 weeks long. Each sprint focuses on completing specific tasks.
   * **Deliverables:** Incremental progress on the house, such as framing, electrical work, or plumbing, with each sprint.
4. **Daily Standups:**
   * **Activities:** Short daily meetings to discuss progress, roadblocks, and plans for the day.
   * **Deliverables:** Daily updates and immediate issue resolution.
5. **Sprint Review:**
   * **Activities:** Present completed work to the homeowner for feedback at the end of each sprint.
   * **Deliverables:** Demonstrable increments of the house and feedback for improvement.
6. **Sprint Retrospective:**
   * **Activities:** Reflect on the sprint process and identify improvements for the next sprint.
   * **Deliverables:** Action items to enhance the process in future sprints.

### Advantages:

1. **Flexibility:** Easily accommodates changes and new requirements.
2. **Continuous Feedback:** Regular homeowner input ensures alignment with expectations.
3. **Early Problem Detection:** Frequent reviews and daily standups identify issues early.
4. **Incremental Progress:** Continuous delivery of house features allows for early use of completed parts.

### Disadvantages:

1. **Requires Discipline:** Team must adhere to Scrum practices for effectiveness.
2. **Potential for Scope Creep:** Constant changes can expand project scope if not managed.
3. **Intensive Communication:** Requires regular and effective communication among team members.
4. **Inconsistent Delivery:** If not well-managed, sprints may not produce fully functional increments.

### Conclusion

Building a house using the Scrum method emphasizes flexibility, continuous feedback, and iterative progress. It allows for ongoing adjustments and ensures the final product meets homeowner expectations but requires disciplined communication and management to prevent scope creep and ensure consistent delivery.