**Assignment 2: Produce a comparative infographic of TDD, BDD, and FDD methodologies. Illustrate their unique approaches, benefits, and suitability for different software development contexts. Use visuals to enhance understanding.**

### Test-Driven Development (TDD)

**Methodology:**

1. Write tests first, then code.
2. Red-Green-Refactor cycle.
3. Emphasizes unit tests.

**Benefits:**

* Early bug detection.
* Improved code quality.
* Encourages modular design.

**Suitability:**

* Agile and iterative projects.
* Projects requiring high code coverage.
* Developer-centric workflows.

**Behavior-Driven Development (BDD)**

**Methodology:**

1. Define behavior with user stories.
2. Write scenarios in a readable, domain-specific language (e.g., Gherkin).
3. Automate tests based on scenarios.

**Benefits:**

* Improved collaboration (developers, testers, product owners).
* Focus on user requirements.
* Documentation and automated tests in one.

**Suitability:**

* Complex or large-scale projects.
* Projects with changing requirements.
* Collaboration-driven teams.

**Feature-Driven Development (FDD)**

**Methodology:**

1. Develop features incrementally.
2. Emphasizes domain object modeling.
3. Iterative planning and design.

**Benefits:**

* Scalable for large teams.
* Clear feature ownership.
* Structured, phased development.

**Suitability:**

* Large-scale enterprise projects.
* Teams with specialized roles.
* Projects with stable requirements.

**Comparison Summary**

| **Aspect** | **TDD** | **BDD** | **FDD** |
| --- | --- | --- | --- |
| **Primary Focus** | Unit tests | Behavior specification | Feature delivery |
| **Testing Approach** | Code-centric | User-centric | Feature-centric |
| **Benefits** | Early bug detection, code quality | Collaboration, user focus | Scalability, structured development |
| **Suitability** | Agile, high coverage | Changing requirements, collaboration | Large teams, stable requirements |

**Key Takeaways:**

* **TDD** focuses on unit testing and code quality early in development.
* **BDD** emphasizes behavior specification and collaboration across teams.
* **FDD** scales well for large teams with structured feature delivery.