**What are the different types of test design techniques? When would you use these types of test design techniques?**

Test design techniques are methods used to derive and select test cases from test conditions or test scenarios.

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| **Test Design Technique** | **Coverage Types / Basic Techniques** | **Test Basis** | **Quality Characteristic / Test Type** | **When to Use** |
| Boundary Value Analysis (BVA) | Input Domain Coverage | Input Specifications | Correctness, Robustness | When testing input ranges and boundary conditions |
| Equivalence Partitioning (EP) | Input Domain Coverage | Input Specifications | Correctness, Robustness | When testing input classes that behave similarly |
| Decision Table Testing | Logic Coverage | Business Rules | Correctness, Business Logic | When dealing with complex business logic |
| State Transition Testing | State-Based Coverage | State Diagrams | Correctness, State Transitions | When testing systems with state-based behavior |
| Pairwise Testing | Combinatorial Coverage | Multiple Parameters | Efficiency, Combinatorial Coverage | When testing combinations of multiple input parameters |
| Use Case Testing | Functional Scenario Coverage | Use Case Specifications | Requirement Validation, Functional Testing | When validating the system against specific use cases |
| Exploratory Testing | N/A | N/A | Defect Detection, Usability Testing | When exploring the system without predefined scripts |
| Decision Table Test | Logic Coverage | Business Rules | Correctness, Business Logic | When testing complex decision-making scenarios |
| Data Combination Test | Input Domain Coverage | Input Specifications | Correctness, Data Validation | When testing various combinations of input data |
| Elementary Comparison Test | Comparison of Individual Elements | Functional Requirements | Correctness, Data Validation | When comparing individual elements in the system |
| Error Guessing | Error-Based Coverage | Tester's Experience | Defect Detection, Usability Testing | When leveraging tester's intuition to guess potential defects |
| Data Cycle Test | Functional Scenario Coverage | Data Flows | Data Flow Verification | When testing data flow through different components |
| Process Cycle Test | Functional Scenario Coverage | Process Flows | Process Flow Verification | When testing end-to-end processes within the system |
| Real-Life Test | Real-Life Scenarios | Real-World Use Cases | Real-Life Use Case Validation | When validating the system against real-world scenarios |