**Task 2: Estimation and Work Breakdown Structure (WBS) for Previous Task (Task 1)**

**Assumptions:**

1. **Test Environment**: A test environment mirroring the production environment will be available.
2. **Test Data**: Relevant and comprehensive test data will be provided or can be generated.
3. **Access to Resources**: Testers will have access to developers, product owners, and business analysts for clarifications.
4. **Tools**: Necessary tools for test management, automation, and performance testing will be available.
5. **Scope**: The scope includes functional testing, regression testing, performance testing, and usability testing for both web and mobile applications.

**Work Breakdown Structure (WBS) for Test Activities:**

1. **Test Planning**
   * Requirement analysis
   * Test strategy development
   * Test plan documentation
   * Risk assessment and mitigation planning
2. **Test Design**
   * Test case creation
   * Test data preparation
   * Test automation script development
   * Review and approval of test cases and scripts
3. **Test Environment Setup**
   * Configuration of test environments
   * Installation and setup of testing tools
   * Verification of test environments
4. **Test Execution**
   * Functional testing
   * Regression testing
   * Performance testing
   * Usability testing
   * Mobile application testing
5. **Defect Management**
   * Defect logging
   * Defect tracking
   * Defect verification and closure
6. **Reporting and Communication**
   * Daily/Weekly status reports
   * Test execution summary reports
   * Defect summary reports
7. **Test Closure**
   * Test closure report
   * Test case and script archival
   * Lessons learned documentation

**Estimation for Test Activities:**

**1. Test Planning (8 days)**

* Requirement analysis: 2 days
* Test strategy development: 2 days
* Test plan documentation: 2 days
* Risk assessment and mitigation planning: 2 days

**2. Test Design (10 days)**

* Test case creation: 5 days
* Test data preparation: 2 days
* Test automation script development: 2 days
* Review and approval of test cases and scripts: 1 day

**3. Test Environment Setup (5 days)**

* Configuration of test environments: 2 days
* Installation and setup of testing tools: 2 days
* Verification of test environments: 1 day

**4. Test Execution (25 days)**

* Functional testing: 8 days
* Regression testing: 5 days
* Performance testing: 4 days
* Usability testing: 3 days
* Mobile application testing: 5 days

**5. Defect Management (7 days)**

* Defect logging: 1 day
* Defect tracking: 3 days
* Defect verification and closure: 3 days

**6. Reporting and Communication (5 days)**

* Daily/Weekly status reports: 3 days
* Test execution summary reports: 1 day
* Defect summary reports: 1 day

**7. Test Closure (3 days)**

* Test closure report: 1 day
* Test case and script archival: 1 day
* Lessons learned documentation: 1 day

**Total Estimated Effort:**

**Total Effort** = 8 + 10 + 5 + 25 + 7 + 5 + 3 = 63 days

**High-Level Description of Test Activities Process:**

1. **Initiation**:
   * Detailed requirement analysis to understand new features and user stories.
   * Develop a test strategy outlining approach, scope, resources, schedule, and risk management.
2. **Planning**:
   * Create a comprehensive test plan based on strategy.
   * Identify risks and create mitigation plans.
   * Prepare test cases and test data aligned with user stories and requirements.
3. **Design and Setup**:
   * Design test cases covering all functionalities, edge cases, and performance aspects.
   * Set up test environment to closely replicate production setup.
   * Develop automation scripts to enhance efficiency and reduce manual testing effort.
4. **Execution**:
   * Perform various levels of testing (functional, regression, performance, usability).
   * Execute test cases and log defects in tracking system.
   * Continuously communicate progress through status reports.
5. **Defect Management**:
   * Log all identified defects with detailed descriptions.
   * Track defect statuses and work with developers to resolve issues.
   * Retest resolved defects to ensure fixes are effective.
6. **Reporting**:
   * Generate regular reports to communicate status of testing activities.
   * Summarize test execution and defect statuses in comprehensive reports for stakeholders.
7. **Closure**:
   * Compile test closure report documenting testing process, results, and any remaining issues.
   * Archive all test artifacts for future reference.
   * Conduct retrospective to document lessons learned and areas for improvement.

**Expected Level of Quality:**

* **Comprehensive Coverage**: Thorough test coverage of all new features and user stories.
* **Defect Identification and Resolution**: Efficient defect management ensuring timely identification, tracking, and resolution.
* **Performance and Usability**: Ensure application performs well under load and offers user-friendly experience.
* **Consistency and Reliability**: Application consistency across web and mobile platforms.
* **Documentation**: Well-documented test cases, reports, and lessons learned to facilitate future testing and development activities.

**Customer Deliverables:**

* Detailed test plan and strategy
* Comprehensive set of test cases and test data
* Automated test scripts
* Regular status and summary reports
* Defect reports with detailed logs and statuses
* Test closure report with analysis and recommendations
* Archived test cases and scripts
* Documentation of lessons learned and areas for improvement

**Task 2: Estimation and Work Breakdown Structure (WBS) for Incremental Development**

**Increment Description:**

The new increment of the application introduces several features to extend the existing functionality:

* User registration
* Booking of office places
* User roles (user and office manager roles)
* Native mobile application

**User Stories:**

1. **User Registration**:
   * As a user, I want to register into the system so that I can access personalized features.
2. **Booking of Office Places**:
   * As a user, I want to book available working places for the future so that nobody else can take the place.
   * As a user, I want to have the ability to cancel a booking so that another user can book it instead.
   * As an office manager, I want to manage working places so that the system provides valid up-to-date information to users.
   * As an office manager, I want to create new working places so that users can find and book them.
3. **User Roles**:
   * As a user, I want to have different roles (user and office manager) so that I can perform specific actions based on my role.
4. **Native Mobile Application**:
   * As a user, I want to use a mobile application for system usage so that I can access the system anytime, anywhere.

**Estimation and Work Breakdown Structure (WBS):**

1. **User Registration (Estimated Effort: 5 days)**
   * Develop user registration form and backend logic (3 days)
   * Implement user registration validation and error handling (1 day)
   * Integrate user registration with existing authentication system (1 day)
2. **Booking of Office Places (Estimated Effort: 15 days)**
   * Develop UI for browsing and booking office places (4 days)
   * Implement backend logic for booking and canceling reservations (5 days)
   * Create UI and functionality for office manager to manage places (3 days)
   * Implement creation of new working places by office manager (3 days)
3. **User Roles (Estimated Effort: 7 days)**
   * Implement user roles functionality in backend (3 days)
   * Develop UI for user role selection during registration (1 day)
   * Test role-based access control for user and office manager roles (3 days)
4. **Native Mobile Application (Estimated Effort: 10 days)**
   * Design mobile application UI/UX (3 days)
   * Develop mobile application frontend (4 days)
   * Implement mobile backend services for seamless integration (3 days)
5. **Testing and Quality Assurance (Estimated Effort: 20 days)**
   * Develop test cases for new features (5 days)
   * Execute functional testing for user registration (3 days)
   * Perform integration testing for booking of office places (4 days)
   * Conduct regression testing for existing functionality (4 days)
   * Test mobile application compatibility and performance (4 days)
6. **Documentation and Deployment (Estimated Effort: 5 days)**
   * Prepare user documentation for new features (2 days)
   * Deploy new features to staging environment for testing (1 day)
   * Finalize deployment plan and schedule production release (2 days)

**Total Estimated Effort: 62 days**

**High-Level Description:**

The estimation and WBS outline the development tasks required for each feature, along with the associated testing efforts. It ensures that all aspects of development, including frontend, backend, testing, and documentation, are accounted for. The process involves iterative development cycles, with continuous testing and quality assurance to ensure the reliability and usability of the new features.

**Task 2: Combined Estimation and Work Breakdown Structure (WBS)**

**Previous Task: Requirements Analysis and Coverage**

**Estimated Effort:** 63 days

* **Test Planning:** 8 days
* **Test Design:** 10 days
* **Test Environment Setup:** 5 days
* **Test Execution:** 25 days
* **Defect Management:** 7 days
* **Reporting and Communication:** 5 days
* **Test Closure:** 3 days

**Incremental Development**

**Increment Description:**

The new increment of the application introduces several features to extend the existing functionality:

* User registration
* Booking of office places
* User roles (user and office manager roles)
* Native mobile application

**User Stories:**

1. **User Registration**:
   * As a user, I want to register into the system so that I can access personalized features.
2. **Booking of Office Places**:
   * As a user, I want to book available working places for the future so that nobody else can take the place.
   * As a user, I want to have the ability to cancel a booking so that another user can book it instead.
   * As an office manager, I want to manage working places so that the system provides valid up-to-date information to users.
   * As an office manager, I want to create new working places so that users can find and book them.
3. **User Roles**:
   * As a user, I want to have different roles (user and office manager) so that I can perform specific actions based on my role.
4. **Native Mobile Application**:
   * As a user, I want to use a mobile application for system usage so that I can access the system anytime, anywhere.

**Combined Estimation and WBS:**

**Total Estimated Effort:** 125 days

1. **Test Activities (Previous Task):** 63 days
2. **Development and Testing for Incremental Features:** 62 days

**High-Level Description:**

The combined estimation and WBS cover both the test activities planned in the previous task and the development and testing effort required for the new features in the incremental development. It ensures a comprehensive approach to project planning, encompassing both existing and upcoming work streams.

**Customer Deliverables:**

* Fully tested and documented system with enhanced features
* Detailed test reports and documentation
* User documentation for new features
* Deployment plan and schedule for production release