# **DevXHub Website** Module 1: User Authentication & Profile System

## **1. User Registration Flow**

* Email/Password registration system
  + Input validation for email format
  + Password strength requirements
  + Username availability check
  + Email verification process
  + Account creation confirmation
  + Welcome email setup
* Social Authentication Integration
  + GitHub OAuth setup and configuration
  + Google OAuth setup and configuration
  + Social profile data mapping
  + Handle duplicate email scenarios
  + Merge accounts capability if needed - **Bounty**

## **2. Login System**

* Traditional Login
  + Email/password validation
  + Failed attempt tracking
  + Password reset functionality
  + Remember me feature
  + Session management
  + Secure token generation
* Multi-factor Authentication (MFA) - **High Priority**
  + SMS verification setup
  + Email code verification
  + Authenticator app integration
  + Backup codes generation
  + MFA recovery process

## **3. User Profile Management**

* Basic Profile Information
  + Personal details (name, location, bio)
  + Profile picture upload and cropping
  + Contact information management
  + Social media links
  + Professional background
* Skills and Expertise
  + Skill tagging system
  + Experience level indicators
  + Certification uploads
  + Portfolio links
  + GitHub integration for showing contributions

## **4. Role-Based Access Control (RBAC)**

* User Roles Definition
  + Admin role capabilities
  + Moderator permissions
  + Regular user rights
  + Guest access limitations
  + Custom role creation
* Permission Management
  + Feature access control
  + Content modification rights
  + User management permissions
  + Resource access levels
  + Activity logging system

## **5. Security Implementation - *Simultaneous Way***

* Password Security
  + Hashing implementation
  + Salt generation
  + Password policy enforcement
  + Previous password history
  + Regular password update prompts
* Session Security
  + Token-based authentication
  + Session timeout handling
  + Concurrent session management
  + IP-based security
  + Device tracking

## **6. Data Protection**

* Privacy Controls
  + Profile visibility settings
  + Data sharing preferences
  + Information access controls
  + Data export capability
  + Account deletion process
* GDPR Compliance
  + Consent Management
  + Data retention policies
  + Privacy policy integration
  + Cookie management
  + User data rights handling

## **7. API Development**

* Authentication Endpoints
  + Registration API
  + Login API
  + Password reset API
  + Social auth endpoints
  + Profile update API
* Documentation
  + API documentation using Swagger
  + Request/response formats
  + Error codes and handling
  + Rate limiting details
  + Authentication flows

## **8. Testing Strategy**

* Unit Tests
  + Authentication functions
  + Validation methods
  + Password handling
  + Token generation
  + Permission checks
* Integration Tests
  + Registration flow
  + Login process
  + Profile updates
  + Role management
  + Security features

## **9. Error Handling - Simultaneous**

* User Feedback
  + Error messages
  + Success notifications
  + Progress indicators
  + Validation feedback
  + Help text and tooltips
* System Monitoring
  + Failed login attempts
  + Unusual activity detection
  + Error logging
  + Performance monitoring
  + Security breach alerts

## **Expected Deliverables**

1. Complete authentication system
2. User profile management interface
3. Role-based access control system
4. Security implementation documentation
5. API documentation
6. Test coverage report - **Later**
7. Error handling documentation
8. User guide for authentication features
9. Proper Documentation after Each and Every Implementation

## **Time Estimation**

* Planning and Setup: 7 days
* Core Authentication: 5 days
* Profile Management: 4 days
* RBAC Implementation: 3 days
* Security Features: 3 days
* Testing: 2 days
* Documentation: 1 day
* Buffer for Issues: 2 days

Total: 22 working days (approximately 4.5 weeks)