Title: A Project on Development of a Web Application That Represents a Typical IT Firm.

Date: 28 OCT 2022

Key Features:

1. Administrative System Module;
2. Employee system module;
3. Project Management Module
4. Accounting System Module;
5. Public Interfaces of the company.

**Tools and systems requirement**:

1. System
   1. **Desktop**: - OS: *Windows 10 Pro 21H2 (10.0.19044) (X64)*, Motherboard: *Gigabyte Z370M D3H-CF*, Processor: *Intel(R) Core (TM) i5-8500 CPU @3.00 GHz*, RAM: *8GB @2400 MHz,* SSD: *120 GB,* HDD*: 320 GB;*
   2. **Desktop**: -
2. Development Server:
   * NodeJS LTS v16.18.0
   * npm v8.19.2
   * npx v8.19.2
   * PHP v8.1.10
   * Composer v2.4.3
   * Laravel v9
   * create-next-app v12.3.1
   * Oracle SQL Developer Data Modeler v22.2.0
   * MariaDB v10.4.24
   * PhpMyAdmin v5.2.0
3. Web Services:
   1. Jira
   2. Github
4. Other Tools:
   1. Visual Studio Code v1.72
5. Production Server:
   1. H

Team Members Requirements:

1. Project Coordinator: Showkat Ali.
2. Advisor: Tasniah Muhiuddin
3. Database Designer: Fatema Akter
4. Software Architect: Showkat Ali
5. Backend Coder: Showkat Ali
6. Frontend Coder: Fatema Akter
7. User Interface Designer: Fatema Akter
8. SQA Manager: Fatema Akter
9. Technical Writer (Documentation): Showkat Ali
10. Trainer: Showkat Ali
11. Client: Fatema Akter

**Client Requirements:**

A Web Application that-

1. Has the following publicly available user interfaces:
   1. Home page
   2. Services index page
   3. Service details page
   4. Portfolio index page
   5. Portfolio details page
   6. About us page
   7. Team page index
   8. Team member details
   9. Contact page
   10. Job Application form
   11. Integrated chatbot
   12. Login page
   13. Registration page
   14. Forgot password page
   15. Password reset page
   16. Terms and conditions page
   17. Privacy Policy page
   18. Sitemap page
   19. Online payment gateway with client account ( for future)
2. Authorized Employee Interfaces:
   1. Dash board each with personal information (Name, ID, Position, Phone Number, Email, photograph), current salary + other allowances, total salary + allowances earned so far, attendance, work time Schedule, work load efficiency graph, leave information, currently assigned project, completed projects with project role.
   2. Notice board (list) page
   3. Notice details page
   4. Online Application for leave approval to administrator (future: office equipment, accessories, Furnitures, and other instruments demand application to accounts and general issues application to administrator.)
   5. Online daily Attendance entry and view.
   6. Update Password
3. Support Staff Interfaces:
   1. Customer Support staff uses chat bot user interface (free version, external)
   2. Office attendant page for staff attendance.
4. Accountant Interface:
   1. Post all earnings with attachments (debit voucher)
   2. Post all expenses with attachments (credit voucher)
   3. Post all assets and liabilities information
   4. Post all cash flow statements information
   5. Measures Income Statements, Cost Balance, Balance Sheet, Accounting measures
   6. Issue Salary with posting to employee.
5. Administration Interface:
   1. Dashboard with all project summary, staff summary, attendance summary, salary summary,
   2. View Balance sheet and other financial measures of the firm
   3. Employee enrolment
   4. Employee update
   5. Adding Notices to employee
   6. Notification updated information through email and respective user profile. (Future)
   7. New Job opening circular Posting.
6. It is single page application
7. 100% responsive view
8. Neat and clean design

Required Time Calculation (hour):

1. Requirements Analysis – user : 15
2. Refactoring Requirements Analysis : 15
3. Database Design: 32
4. Software Architecture design (UML diagram, use case diagram, class diagram, Gantt chart, and other): 20
5. User Interface Design: 35\*2 = 70
6. Frontend coding - 35\*3 = 105
7. Backend coding - 35\*3 = 105
8. Communication: 32
9. Configuration: 24
10. Buffer time: 70
11. Testing: 100
12. Documentation: 32
13. Others: 50

Total: 670 work hours

Work Procedure:

1. Gathering Requirements: (Functional requirements, Non-functional requirements, user requirements, system requirements)
2. Design software prototype
3. Design database
4. Design user interface
5. Review
6. Develop backend
7. Develop frontend
8. N Testing and improvements

References:

1. Software Engineering (8th edition) by Ian Sommerville.
2. Beginning Software Engineering (2nd edition) by Rod Stephens (Publication: Wiley)
3. Database System Concepts (7th edition) by Avi Silberschatz, Henry F. Korth, and S. Sudarshan
4. ISO/IEC 27001 (1st edition)
5. Software Quality Assurance: Integrating Testing, Security, and Audit by Abu Sayed Mahfuz (CRC Press)
6. Practical Laravel Develop clean MVC web applications by Daniel Correa, & Paola Vallejo (1st edition)
7. <https://laravel.com>
8. <https://reactjs.org>
9. <https://nextjs.org>