



Government of the People's Republic of Bangladesh
BANGLADESH FIRE SERVICE AND CIVIL DEFENCE

Fire Service and Civil Defence Directorate
38-46 Kazi Alauddin Road, Dhaka-1000.

**REQUEST FOR PROPOSAL
FOR**

Selection of software development firm to develop requirement analysis, design, development, implementation and maintenance of web based integrated HRM Database Software.

INVITATION FOR PROPOSAL NO: HRM 01/2021

ISSUED ON: 25 February 2021.

Md. Abdul Momen
Assistant Director (Training)
Fire Service & Civil Defence
Directorate, Dhaka

Section 6. Terms of Reference (TOR)



Terms of Reference For

Selection of software development firm to develop requirement analysis, design, development, implementation and maintenance of web based integrated HRM Database Software.

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Introduction

Human Resources Database Software is built to manage HRM systems as well as job files having instant answers, whilst the reliability along with secureness which is essential for Bangladesh Fire Service & Civil Defence. This application needs to extremely robust as well as cost-effective.

Human Resources Database Software need to be a web-based application that will be utilized for information and facts entry, info monitoring along with the data specifics prerequisites of an admin's human resources (HR) management. A Human Resource Information System is generally Human Resources Database Software presented as being a data source where as a HR Access Database Software is for worker (HR Employee Database) and career details for organizations.

HR Administrators and directors (Human Resources Database Systems) will be able to sustain status, contact details as well as with regard to their personnel. Evaluations are usually created with regard to compliance and critical reasons. This application is intended for HR officers along with HR staff of organisation for handling workforce plus occupation documents.

This system can be an application or collection of systems for taking care of company functions associated with human capital management (HCM). These kinds of models are often as uncomplicated as a data source and affiliated database management system (DBMS). Regarding details about more complicated methods, view human resource specifics.

A Human Resource Management System (HRMS) or Human Resources Database Software, means the programs and procedures within the junction relating to human resource management (HRM) and data technological innovation. This combines HRM as being a technique along with, specifically, the standard HR routines and procedures using the information technology industry, whilst the encoding of information handling programs developed into standardised regimens and applications of enterprise resource planning (ERP) software and human resource software.

Bangladesh Fire Service & Civil Defence decided to develop new HR Database software which will be developed with the latest technology and needs to be well maintained and secured.

Scope of work highlights

1. Prepare the User Requirement Specification (URS) for the software.
2. Design the software and technology for better performance, flexibility, scalability and extensibility.
3. Prepare Technical Documents including (Not limited to) SRS, Data Dictionary, Use cases, Test Cases, Training Manual and ERD.
4. Provide concrete revamping plan in the SRS, which should include context diagram of the proposed system, Sequence Diagram, Use case Diagram, and Process Flow Diagram.
5. Vendor will ensure addressing acceptable UX survey and develop the system by reasonable time.
6. Integrate plug-ins for integrating SMS gateway if needed.
7. Software should have provision to integrate with FSCD's existing ID Card and Attendance Software.
8. Software needs to have necessary controls for being browser independent and responsive.
9. Necessary accessibility needs to be ensured.
10. Define technical managed hosting requirements and prepare its technical document.
11. Provide necessary support to Data Centre and users for data, content and application configuration.
12. Provide updated technology services, development and implementing those services/solution for enhanced performance of software system.

Features:

Following features are the must have in the system (Not limited to)

1. Employee Management:

The features will allow the admin to record employee profile for the Bangladesh Fire Service & Civil Defence and manage each employees profile with following sub features

- a. Employee Manager
- b. Retirement Management
- c. Employee Searching & Data Exporting

2. Job History Management:

This feature will allow admin user to input job posting details and display job history for each employee of Fire Service & Civil Defence.

3. Punishment Management:

This feature will allow admin user to input punishments orders & details and display punishments orders for each/batch employees of Fire Service & Civil Defence.

3. AWARD Module:

This feature will allow admin user to input award details and display award records for each /batch employees of Fire Service & Civil Defence.

4. Leave Module

This feature will allow admin user to input leave type details, display& assign leave records for each /batch employees of Fire Service & Civil Defence.

5. Achievement Module

This feature will allow admin user to input achievement type-details, display& assign achievement records for each /batch employees of Fire Service & Civil Defence.

6. Training Module

This feature will allow admin user to input training type details, display & assign training records for each /batch employees of Fire Service & Civil Defence.

7. Core Data Module

This feature will allow user to manage system data like Station, Department, Sub Department, Designation, Division, District, Upazilla, Relationship, Quota, Grade, Office, Subject, Institute, BatchAction management etc.

8. Admin Module

This module will allow admin to manage site data and site configuration.

Maintenance and Support

- a) Provide Post development support service under structured SLA and Change Management Architecture.
- b) Continuous health check of Database, tuning database, tuning codes & queries and mitigating the issues.
- c) Recording, managing reporting issues and user level application related technical problems received through the method prescribed by FSCD, develop and deploy necessary solutions.
- d) Updating training manual adjusting the changes in the system.
- e) Fixing all bugs in the system irrespective of its nature and complexities.
- f) Deploying dedicated Support Engineers 9AM to 5PM each day to address maintenance and support issues.
- g) Enhance and/or re-arrange existing feature of extended development of any supplementary feature within the existing technology framework complying with core SRS.

- h) Support & Maintenance will cover fixing all bugs and system errors as and when identified by the system users.
- i) Support and improve Role-wise credential system incorporation for better user role management.
- j) Vendor shall implement auto backup and database archiving system to meet up the challenge
- k) of system recovery, in case of any disaster or missing data.
- l) The vendor's team will work at their office premises or in case of specialized requirement, they may work at the FSCD premises or any FSCD designated location.
- m) Assign a Project Manager who will work closely with the FSCD designated official to ensure proper delivery of any assignment during the support and maintenance phase.
- n) The concerned company cannot assign the programmers to other project till completion of the assignment and will ensure the continuity of the scheduled work by other programmer in case of his/her absence.

Change Management and Version Control

- a) Developing, recording and reporting change documents, source code management and version management.
- b) Adjust and update system in compliance with any Security test, Load Test or IT Audit conducted by the client.
- c) Incorporating and streamlining the system in compliance with updated versions of development tools/language/DB and ensure availability of APIs as required for integration with other services.
- d) Ensure all levels of testing prior to execute changes in production environment.

Project Management

The bidders are expected to provide a detailed project plan and an implementation strategy of the project. This plan is expected to include:

- Information regarding the development process (the bidder will comply with all standards).
- Application development tools, language, and database requirements
- Maximum lead time for delivery of services.
- A development method and schedule with indicative timeline (Gantt chart).
- Risk management strategy and quality control mechanism.
- Any development tasks or assumptions that may be required to render the solution fit-for-purpose.
- Any anticipated integration tasks.
- Comprehensive contingency plan.

Data Archiving

Designing and Developing Data archiving system of the data retained in the system as per record retention process in compliance with technology architecture.

Post-Hosting and Sizing Support

- Providing active and operation support to Data Center in application/DB sizing the product reconciling and adjusting with user-base and number of offices.
- Regular database tuning and application configuration support to hosted environment.
- On-demand accountable consultancy support to Data Center in terms of Data Backup Scheduling, Back-end service execution, Server Configuration for DB/Application/Load Balancing.

System Setup & Hosting

Vendor will install and host the developed system into the Bangladesh Computer Council (BCC) web server or FSCD Datacenter premises and test the system with real data. At this situation vendor will perform all standard test methods before final implementation. During the development period vendor will host the system into their own server till final delivery.

Capacity Management and Knowledge Transfer

- a) Assist FSCD Implementation team in Piloting the new module/features of the software.
- b) Provide ToT for minimum 5 users and Operational Orientation for minimum 20 end-users nominated by FSCD.
- c) Provide technical consultancy to the client for operational management during implementation.
- d) On-demand facilitation of system update information to client as mini-training session (Quarterly and/or in case of major changes executed)
- e) Provide authentic access to client experts to source code and documents.
- f) Developing Video Tutorial for end-users.

Intellectual Property Right

The copyright of the delivered system will be owned by FSCD and associate project stakeholder. The vendor must provide all source codes with relevant documentation. The vendor should properly document all such codes and deliver it to the project and cannot claim any royalty or authority of any sort in case of replicating the source code /database or any other deliverables under this ToR for any future use that the Government of Bangladesh may see fit. Furthermore, the vendor shall not use any library or code that has any other copyright claim associated with it, which will prevent or restrict smooth transfer of ownership in any ways. Vendor needs to share codebase during development in git server with the Technical team of or authorised team by Fire Service & Civil Defence.

Technology Specification

The recommended technologies and tools are as follows:

- **Framework:** Laravel 7.x
- **Programming:** PHP 7.3.x +
- **Database:** MariaDB 10.x
- **Web Server:** Nginx 1.2.x / Apache 2
- **Cache Server:** Memcache
- **Source Control:** Git
- **Project Management:** JIRA or any opensource alternative

Security and Privacy Management

The system's authentication and permission system are robust to ensure highest level of security. The following measures will be placed to prevent any kind of security breach:

- Invalid Input:
In order to cover data integrity and user access, all incoming data will be validated, checked and purified before acting on that.
- URL restriction
The system only shows the links to which the logged in user has permission. Moreover, trying to access a URL by guessing is automatically prohibited.
- Protected Administration Panel
The admin panel URLs of the software's will be different than the well-known software URLs. The communication between the user's browser and the administration panel will be SSL encrypted to prevent data hijacking through network protocols.
- Password Hashing
All kinds of password in the system are hashed using one-way algorithm and random salts are used to strengthen the hashing mechanism.
- Session and Cookies
User sessions and cookies are always re-generated uniquely each time they log in.
- Disclosure of Sensitive information
In case of any system failure or error condition, no sensitive information (ex: database credential) are displayed on the site. All kinds of errors are suppressed and logged and are only accessible by the administrators with proper rights.
- CSRF Prevention
In order to prevent CSRF (Cross-Site Request Forgery) attack, automatic tokens is generated for each form so that unauthorized submission of forms cannot take place.
- System File Access
No system level file/information is accessible throughout the web browser thanks to Drupal's tight file security. The system also does not allow executing direct files.
- SQL Injection
Using prepared statements and proper escaping prevents SQL and Code injections.
- Cross Site Scripting Prevention
The contents submitted by the end users (ex: comments) are always filtered to remove all malicious script so that XSS (Cross-Site Scripting) cannot take place.

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Performance

The system will be able to handle large traffic load with the use of caching mechanism. With the infrastructure outlined in the plan, the following performance rate can be achieved:

- **Hits per day:** 5000+ hits
- **Active users per day:** 200+users
- **Concurrent users:** 40+ users

Production System Management and Sizing:

- o) Configure necessary Staging & Production server.
- p) Continues server monitoring sizing and tuning.
- q) Maintain system uptime as per standard SLA.
- r) Keep planning backup schedule for DB content and ensure its repository at client specified Data Centre.
- s) Security: Protection & security of content, hosting environment, servers, network elements, access & network must be ensured.
- t) Ensure senatorial usage of data bandwidth capacity, assessment of data load.
- u) Mirror hosting: To be introduced as a full proof measure and can be done in collaboration with FSCD nominated agency.
- v) Ensure Instant Modular expandability option of cloud computing resources using cloud resource control & configuration panel.
- w) Ensure Instant Internet IP address & bandwidth increase & expansion ready arrangement to accommodate scalability, user growth & integration to other systems.
- x) Ensure System software back-up at DR site.
- y) Assist & coordinate with FSCD team to upload the content, application & DB. FSCD would have full administrative control.
- z) Monitor user experience of IP & Suggest performance development requirements supported by analysis & findings of such monitoring.
- aa) Provide Version Control Solution, User Feedback Recording System, Incident Management Mechanism, CMS & DB tuning services for the aforesaid systems.
- bb) Internet resource availability: Readily available IP address pool and adequate Internet Bandwidth with instant enhancement option should be readily available.
- cc) Provision for scalable VMs, distributed Database system and accommodation for data mining space and database space for other required data stations needed for business intelligence data storage [MySQL/MariaDB].

Delivery & Duration of the assignment

5.1 Total Duration of the assignment is 15 Months.

Selected Vendor will have to sign separate SLA and Non-discloser agreement as part of the core agreement for this 15 Months.

5.2 Deliverables

SN	Major Activity	Timeline
01	Application development according to the scope of work	Conduct background scoping and research work and finalizing the system requirement specification (SRS)
		Feedback collection and incorporation
		Handover the final solution
02	Troubleshooting and maintenance	Provide 15 Months Troubleshooting and Maintenance support for the smooth operation of Techers Software from the date of Contract Agreement Signing.
		Provide 15 Months Troubleshooting and Maintenance support for the smooth operation of Techers Software from the date of Contract Agreement Signing.
03	User support services	Provide 15 Months technical support services to the stakeholders from the date of Contract Agreement Signing
		Provide prompt support for easy and quick registration, log-in, password reset, technical difficulties
		Provide monthly follow-up calls to officials for sharing individual progress and performance to improve consistency of performance
		Video / Text Documentation of the system

Requirement of Technical Team

Team Leader /Project Manager	
Number of Persons	1 person
Job Description	The Project Manager is responsible for the day-to-day operational management of the project, including developing and overseeing work and preparation of project progress reports. S/he is responsible for regular reporting to the client. The chosen candidate is responsible for overseeing all technical aspects of the project implementation including analyse the user requirements, develop software design, choose the right technical solution as well as oversee the right implementation to ensure sustainability.
Requirements	i) Minimum graduate in Computer Science and Engineering/ICT preferably having a degree from a reputed university. ii) 5 years of progressive experience with at least 3years' experience in managing large scale IT projects. Past Experience in leading such an assignment, role including software design and development, preferably in Bangladesh Government IT projects.

System Analyst	
Number of Persons	1 person
Job Description	<p>The System Analyst is expected to analyse the user requirements through meetings and discussion session with the targeted beneficiaries. After finalizing the primary draft of User Requirement Specification through vetting with the users, the System Analyst will prepare the Software Design Document in consultation with the Team Leader /Project Manager and share the document with QA Specialist. Specifically, the System Analyst will –</p> <ul style="list-style-type: none"> ▪ Design the architecture for systems integration as required ▪ Prepare plans for optimal data storage and retrieval procedures ▪ Prepare plans for data standardization ▪ Prepare SRS ▪ Prepare other technical documentation as per project requirement.
Requirements	<ul style="list-style-type: none"> i) Minimum graduate in Computer Science and Engineering or extra ordinary experience. ii) 5 years of progressive experience in the sector of software development

Security Expert	
Number of Persons	1 person
Job Description	<p>The security expert will be responsible for the security of the system while in and after development. Specifically, they will be responsible for:</p> <ul style="list-style-type: none"> • Checking and monitoring security of Server & Network. • Provide input to systems development team during the development phase for ensuring the high-level security. • Monitoring Application level Security and provide feedback to Development team for fixing the bug.
Requirements	<ul style="list-style-type: none"> i. Minimum graduate in Computer Science and Engineering or relevant subjects. ii. 3 years of progressive experience in web application security and infrastructure security.

Senior Software Engineer	
Number of Persons	1 person
Job Description	<p>The Senior Software Engineer will lead to development team for develop and design different modules for technology solutions for the target population. He will be responsible for designing and developing system for successful deployment. Additionally, he will monitor the programmers for executing different development tasks to implement different modules of the system.</p> <p>Additionally, the position will –</p> <ul style="list-style-type: none"> ▪ Assist Systems Analyst for Conduct requirement analysis for development solution. ▪ Provide assistance to develop system design for any technical solutions
Requirements	<ul style="list-style-type: none"> i) Minimum graduate in Computer Science and Engineering/ICT ii) 5 years of progressive experience in the related field. iii) Must have progressive experience in developing android mobile app.

Software Engineer	
Number of Persons	2 persons
Job Description	The Software Engineers are expected to drive the major software programming initiative in the project. This includes design, develop, and modify the modules with arranging the needed functionalities accordingly. The database backend is also expected to be developed by this team, including adding and modifying the structure, the stored procedures (if any), SQL queries, triggers and enable necessary security with backup features.
Requirements	<ul style="list-style-type: none"> i) Minimum graduate in Computer Science and Engineering/ICT ii) 5 years of progressive experience in the related field. iii) Must have progressive experience in developing web applications.

QA Engineer	
Number of Persons	1 person
Job Description	<p>The QA Engineers will work under the supervision of the QA Specialist for ensuring the quality of the products that reach the client. Specifically, they will:</p> <ul style="list-style-type: none"> ▪ Prepare test cases in accordance with the test plan and share with QA Specialist ▪ Execute the test cases, log the results and ensure steps to reproduce (in case of software bug) ▪ Share the results with the QA Specialist within expected deadline
Requirements	<ul style="list-style-type: none"> i) Minimum graduate in Computer Science and Engineering or relevant subjects ii) 3 years of progressive experience in the sector of software testing and quality assurance

UX Designer	
Number of Persons	1 person
Job Description	<p>The UX Designer will be responsible for supplying all digital imagery required for preparing the software including CSS templates, GUI for each screen. Specifically he will –</p> <ul style="list-style-type: none"> ▪ Understand the full functionality of the software applications and organize the UI components in different pages, sections, tabs to ensure maximum user-friendliness and aesthetics ▪ Prepare mock HTML /PSD screens for each page of the web-based applications and get the design approved from the relevant authority ▪ Prepare and supply the developer team with CSS, GIF, and JPEG files for screens, buttons, banners and other items as required ▪ Prepare the help files, manuals, and other documentation to ensure accessibility and attractiveness
Requirements	<ul style="list-style-type: none"> i) 3 years of progressive experience in the sector of UX designing for software development purpose.

Support Engineer	
Number of Persons	2 person
Job Description	The support engineers will be responsible for helping the end user use the software applications developed in every mean possible, by identifying and solving the issues, and work as the interface between the software engineer and the targeted users.
Requirements	2 years of experience in IT-related fields, with clear understanding about web-based applications development based on 3-tier technology, and hands on-experience in solving end-user problems.

Technical Writer	
Number of Persons	1 person
Job Description	The Technical Writer will be responsible for preparing all the technical document guided by Project Manager.
Requirements	3 years of progressive experience in the sector of software development related technology documentation.

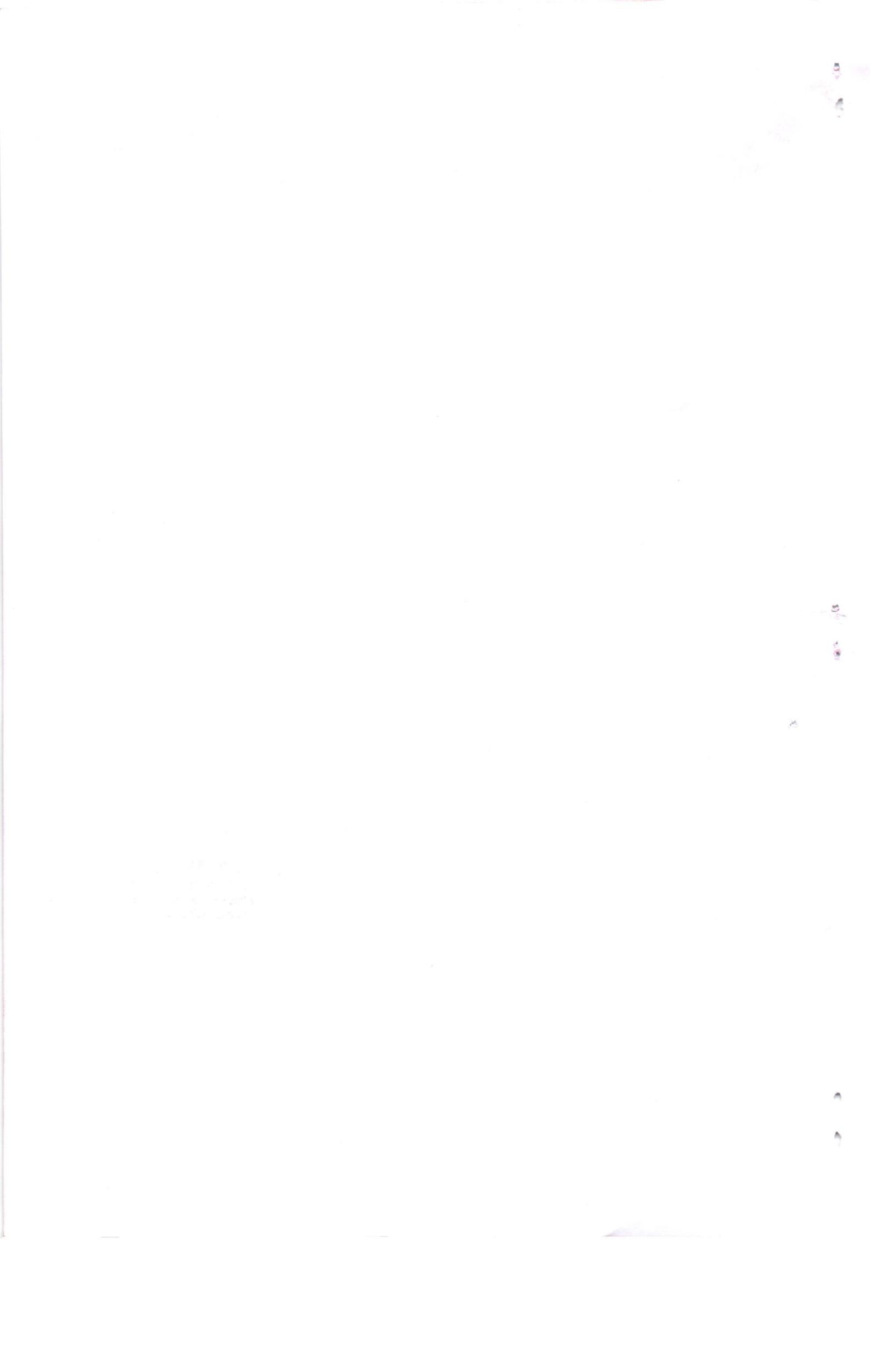
Notes :

- For extra-ordinary experience and relevant achievement (e.g., success in ACM programming contest), team members having non-CSE/CS degrees will be considered.
- Also, for extra-ordinary qualification, experience requirement may be relaxed.
- Bidders may add more personnel and/or more positions if they think necessary.
- Educational qualification can be relaxed if anyone has exceptional knowledge and experience in any domain.

Criteria		
Technical		Max. Points
1. Overall experience and Expertise of the organization/Firm		20
Organization Profile, administrative and financial management structure of the organization		5
Experience of any running/maintaining large-scale enterprise running software solution for Government of Bangladesh of any cooperate sector related to public service delivery and management.		10
Working experience with Government of Bangladesh		5
1. Expertise of Key personnel		15
Competency of Project manager		3
Competency of System Analyst		3
Competency of UX Designer		2
Competency of Sr Software Engineer		2
Competency of Software Engineer		2
Competency of Security Expert		1
Competency of Database Expert		1
Competency of Support Engineer		1
Competency of Test/QC Expert		3
2. Methodology proposed in the technical proposal		65
Overall understanding of the assignment & proposed solution- architecture		20
Proposed work plan and timeline relevant to the assignment as per the Terms of Reference		15
Appropriateness and relevance of development tools and methodology		10
Change request/quality control (SDLC) mechanism during the project		10
Risk Management & Overall flexibility		10

Payment Schedule:

SI	Deliverable	Timeline	Payment
1	Inception Report with Detail plan, Delivery of SRS of the system Delivery of Standards, first draft	End of 1 month	20%
2	Delivery of First Beta Version of Software	End of 3 months	30%
3	Delivery of Final Version change management of system report	End of 4 months	40%
6	Continuous integration, sizing, support and change management of existing system report for 15 months	End of 15 Months	10%



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