



PALLI KARMA-SAHAYAK FOUNDATION (PKSF)

www.pksf.org.bd

TERMS OF REFERENCE (ToR)

for

Senior Software Engineer Full-stack

1.0 Background

Palli Karma-Sahayak Foundation (PKSF), an apex development organization founded by the Government of Bangladesh, is mandated for poverty alleviation through sustainable employment generation by providing appropriate financing, skill training, and other necessary services. As a second-tier organization, PKSF implements all programs and projects through more than 200 of its Partner Organizations (POs) across the country.

As part of its ongoing efforts to strengthen digital services and improve operational efficiency, PKSF's Information Technology and Digital Solutions Department (ITDSD) is expanding its software development capacity. This requires professionals capable of designing and delivering complete, end-to-end software solutions—from user-facing interfaces to the underlying business logic and data layer that support PKSF's programs, partner organizations, and internal operations.

Given the volume and sensitivity of financial, project, and partner organization records, the incumbent will design, build, and maintain secure, high-performance, and resilient full-stack systems.

2.0 Position Title & Administrative Overview

- **Position Title:** Senior Software Engineer Full-stack
- **Duty Station:** PKSF Bhaban, Dhaka (with occasional field visits as required)
- **Employment Duration:** Initially 4 years (subject to annual renewal based on performance)
- **Age Limit:** Maximum 40 years on the last date of application
- **Years of Experience:** Minimum of **six (06) years** of professional experience in full-stack software development.
- **Consolidated Monthly Salary:** BDT 1,60,000/- (inclusive of all taxes as per Government rules) plus admissible benefits (annual increments, festival allowances, Bangla Noboborsho allowance, mobile allowance, group insurance) as per PKSF policies.

3.0 Key Responsibilities and Tasks

The Full Stack Senior Software Developer will work under the Information Technology and Digital Solutions Department (ITDSD) of PKSF and will be responsible for the following tasks:

A. Architecture & Full-Stack Application Development

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1. **Core Development:** Design, develop and implement full-stack enterprise applications, building scalable RESTful APIs and microservices using **Java (Spring Boot)** for the backend and dynamic, responsive user interfaces using **React** for the frontend.
2. **Domain Modeling & API Design:** Analyze user requirements and translate them into domain models, secure API endpoints, and optimized data workflows.
3. **Frontend Systems & Accessibility:** Design, develop and build reusable, modular frontend components following **Material Design** principles, ensuring intuitive, accessible interfaces optimized for varying network conditions (online & offline) to support field-level operations.
4. **Asynchronous & Batch Processing:** Architect background job execution pipelines (e.g., Spring Batch, message queues) for handling bulk financial transaction data and beneficiary uploads submitted by POs without blocking core HTTP application services.

B. Database Engineering & Performance Tuning

1. **Database Development:** Design, optimize, and maintain relational databases (PostgreSQL, Oracle, MySQL) and NoSQL stores (MongoDB).
2. **Query Optimization:** Write optimized SQL, stored procedures, and fine-tune ORM usage (JPA/Hibernate), connection pooling, indexing, and JVM threading behavior in microservice environments.
3. **In-Memory Caching:** Implement distributed caching and session management using **Redis** to reduce latency and database load.

C. Security, Identity & DevOps Operations

1. **Application Security & SSO:** Apply robust API security conforming to OWASP standards, implementing authentication, authorization, and role-based access control (RBAC) via **OAuth2, JWT, and Keycloak (IAM/SSO)**.
2. **Containerization & CI/CD:** Deploy and manage services using **Docker/PodMan** containerization and **Kubernetes** orchestration, supporting automated release pipelines via **GitLab CI/CD, GitLab Actions, or Jenkins**.
3. **Observability & Incident Management:** Operate services post-deployment using monitoring, logging, and profiling tools (**ELK Stack, Prometheus, Grafana**) to diagnose bottlenecks and ensure high uptime.

D. Code Governance, Testing & Documentation

1. **Quality & Code Reviews:** Write clean, maintainable, and well-tested code across the stack with comprehensive unit and integration tests; conduct peer code reviews and refactor legacy services while preserving backward compatibility.

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2. **Technical Documentation:** Maintain thorough technical documentation (as applicable for each SDLC phases) including API specs (Swagger/OpenAPI), Entity Relationship Diagrams (ERDs), component specifications, and sequence diagrams.
3. **Collaboration & Mentorship:** Collaborate effectively with developers, QA, DevOps, and program stakeholders, and mentor junior software developers in software engineering best practices.
4. Perform any other duties as assigned by the supervisor/department head.

E. Capacity Building & Stakeholder Coordination

1. **User Training & SOPs:** Support the preparation of financial user manuals, SOPs, and training materials; conduct practical training for PKSF internal/external personnel.
2. **Interdisciplinary Coordination:** Serve as a bridge between pksf officials, business analysts, software engineers, Mobile Application Developres, and QA engineers to ensure technical outputs align with SDLC standards and organizational policies.

4.0 Academic and Other Qualifications

1. **Academic Degree:** Candidates must have a Bachelor's degree in Computer Science / Computer Science & Engineering / Information Technology / Software Engineering / Equivalent Degree from a reputed university.

or

Candidates with a Bachelor's degree in any other discipline will also be considered provided they possess substantial professional experience in the software development field.

2. **Academic Record:** Applicants must have at least **three First Divisions/Classes** or equivalent CGPA in their academic record. The stated academic requirement may be relaxed for applicants demonstrating exceptional professional expertise and a proven track record.

- o *Note:* Any Third Division/Class in any examination is **not acceptable**.
- o First Class will be determined based on the candidate's regular degree (considering the first four degrees only).

5.0 Experience & Required Competencies

Mandatory Requirements:

- **Years of Experience:** Minimum of **six (06) years** of professional experience in full-stack software development.
- **Core Technology Stack:** Demonstrated hands-on experience developing enterprise systems with **Java (Spring Boot)** and **React / Angular**.

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Preferred Qualifications & Demonstrated Capabilities:

1. **Verifiable Code Portfolio / GitHub Presence:** Preference will be given to candidates who provide a link to an active public code repository (**GitHub, GitLab, or Bitbucket**) demonstrating clean code design, modular architecture, unit/integration testing, clear documentation (READMEs), and containerized setup (docker-compose).
2. **Enterprise Architecture:** Strong experience in full-stack enterprise software, microservices, service-oriented architecture (SOA), RESTful API security, and data exchange formats (JSON, XML, SOAP where required).
3. **Database Mastery:** Expertise in **PostgreSQL** schema design, complex query optimization, indexing, transaction management, and performance tuning (experience with Oracle PL/SQL, MySQL, or MongoDB is an advantage).
4. **Caching & Asynchronous Systems:** Hands-on experience with **Redis** distributed caching strategies, session management, and message/task queuing.
5. **Security & Identity Management:** Experience in OWASP-aligned secure coding, RBAC implementation, data encryption, and Centralized Identity Management engines (**Keycloak, OAuth2, JWT**).
6. **DevOps & Containerization:** Practical experience with **Docker/PodMan, Kubernetes**, Git-based version control, and automated CI/CD release management.
7. **Observability & Troubleshooting:** Experience in performance tuning, thread/memory profiling, and system monitoring using **ELK Stack, Prometheus, or Grafana**.
8. **Cloud & Professional Certifications:** Preferred candidates holding Associate or Professional-level credentials.