**3.1 Functional Requirements**

| **FR No.** | **Functional Requirement** | **CRUD Operation** | **Module** | **Comment** |
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| **FR1** | Allow patient registration with email verification | Create | User Management | Sign up page with form for user details , email verification through code. |
| **FR2** | Provide secure login and logout for all users | Read | User Management | Encrypt personal data when storing personal data. |
| **FR3** | Enable password reset and account recovery | Update | User Management | Use email verification protocol to verify the user’s identity to gain access to a password reset form . |
| **FR4** | Let users edit personal profile information | Update | User Management | Personal detail page consisting of user’s detail , which can be edited through the page. |
| **FR5** | Enforce role-based access for patients, technicians, radiologists, and administrators | Read / Update | User Management | Assign roles and define permission for each role. Slightly different UI for each roles. |
| **FR6** | Enable patients to book MRI appointments online | Read / Update | Appointment Scheduling | Show available time slots for MRI booking |
| **FR7** | Allow selection of preferred date, time slot, and location | Read / Update | Appointment Scheduling | User can select location and available time slot can be selected based on selected location |
| **FR8** | Display available appointment slots in calendar view | Read | Appointment Scheduling | Available time slots are displayed based on selected location. |
| **FR9** | Let staff schedule, edit, or cancel appointments | Update | Appointment Scheduling | Staff will have access to appointments and will check for referrals when accepting booking. |
| **FR10** | Send automated email or SMS confirmations and reminders | Read | Appointment Scheduling | Email sent on appointment confirmation and reminder sent a day before the appointment. |
| **FR11** | Store patient demographic details, including name, date of birth, and contact information | Create , Read | Patient Profile Management | Store details in database in encrypted format. |
| **FR12** | Maintain medical history and contraindications | Create | Patient Profile Management | History page to show all previous medical history and contradictions. |
| **FR13** | Allow upload of physician referral documents | Create | Patient Profile Management | Available in booking appointment page |
| **FR14** | View past and upcoming appointment history | Create/ Read | Patient Profile Management | Appointment history tab with all previous bookings. |
| **FR15** | Manage emergency contact details | Create , Update , Read | Patient Profile Management | Available in personal detail page. |
| **FR16** | Upload and store physician referral orders | Create | Order and Referral Management | Patients can upload referrals when booking appointments. |
| **FR17** | View and manage pending referrals | Read , Update, Delete | Order and Referral Management | Staff can view referral when managing appointments. |
| **FR18** | Assign referrals to scheduled appointments | Update | Order and Referral Management | Accept or reject referral . |
| **FR19** | Notify referring doctors when appointments are scheduled | Read | Order and Referral Management | Also Notification |
| **FR20** | Record MRI scan details such as body part, protocol, and settings | Create / Read | MRI Procedure Management | MRI Image with scan details to be filled by technician in a form based page. |
| **FR21** | Assign specific technician and radiologist to each procedure | Update | MRI Procedure Management | Each time slot to be assigned to technician and radiologist. |
| **FR22** | Track scan status (Scheduled, In Progress, Completed, Reported) | Read | MRI Procedure Management | MRI images and details uploaded manually. |
| **FR23** | Log equipment used and scan duration | Create ,Read | MRI Procedure Management | Log date and time , equipment id and scan duration. |
| **FR24** | Store MRI images securely in PACS or internal database | Create , Read | Image Storage and Retrieval | Save uploaded MRI images in a secure medical image storage system. |
| **FR25** | Upload DICOM images from scanners | Create | Image Storage and Retrieval | Upload DICOM files directly from MRI scanner into the system. |
| **FR26** | Link images to specific patient records and appointments | Create , Read | Image Storage and Retrieval | Connect uploaded images to patient profile and appointment data. |
| **FR27** | Allow radiologists to view and annotate images | Read, Update | Image Storage and Retrieval | Provide image viewer with annotation tools for radiologists. |
| **FR28** | Support image export and sharing with authorised users | Read , Update | Image Storage and Retrieval | Allow export of images to DICOM and share with approved users. |
| **FR29** | Enable radiologists to create structured MRI reports | Create | Reporting | Provide input fields for structured MRI report writing. |
| **FR30** | Store and link reports to corresponding appointments | Create , Read | Reporting | Automatically link completed reports to patient appointments. |
| **FR31** | Provide template-based reporting options | Read | Reporting | Use pre-filled report templates for common scan types. |
| **FR32** | Allow electronic signing and finalisation of reports | Update | Reporting | Enable radiologists to digitally sign and lock final reports. |
| **FR33** | Share completed reports securely with referring doctors and patients | Read | Reporting | Allow patients and doctors to view/download signed reports. |
| **FR34** | Generate itemised bills based on procedures performed | Create | Billing and Payment | Auto-generate bills after scans based on selected services. |
| **FR35** | Support multiple payment methods, including card and insurance | Create | Billing and Payment | Accept payments via card or linked insurance providers. |
| **FR36** | Issue digital receipts for completed payments | Create | Billing and Payment | Send receipt via email or allow download from portal. |
| **FR37** | Track payment history for patients | Read | Billing and Payment | Display list of past payments for each patient. |
| **FR38** | Manage insurance claims and approvals | Create , Read, Update | Billing and Payment | Enable admin to submit and track insurance claim status. |
| **FR39** | Send email or SMS notifications for appointment confirmations and reminders | Create | Notifications and Communication | Auto-send reminders to patients before appointments. |
| **FR40** | Notify patients when MRI reports are ready | Create | Notifications and Communication | Alert patients once their report is uploaded. |
| **FR41** | Enable secure messaging between patients and staff | Create , Read | Notifications and Communication | Allow patients to send and receive secure messages. |
| **FR42** | Notify referring physicians when reports are complete | Create | Notifications and Communication | Send email or system alert to external doctors when reports are ready. |
| **FR43** | Allow internal communication between technicians, radiologists, and admins | Create , Read | Notifications and Communication | Provide internal message panel for team discussions. |
| **FR44** | Allow patients to log in to view their completed MRI reports | Read | Results Delivery and Patient Portal | Patients can securely access and read their reports online. |
| **FR45** | Enable secure download of DICOM images if permitted | Read | Results Delivery and Patient Portal | Allow patients to download their scan images when authorised. |
| **FR46** | Let patients view billing history and receipts | Read | Results Delivery and Patient Portal | Show past bills and receipts under patient account. |
| **FR47** | Provide ability to manage upcoming appointments | Update | Results Delivery and Patient Portal | Let patients reschedule or cancel bookings. |
| **FR48** | Enable patients to manage their notification preferences | Update | Results Delivery and Patient Portal | Allow opt-in/out for SMS and email notifications. |
| **FR49** | Allow creation and management of staff accounts | Create , Update , Delete | Staff Management | Admins can add/edit/remove staff user accounts. |
| **FR50** | Assign roles and permissions to staff members | Update | Staff Management | Define access levels based on job role. |
| **FR51** | Manage staff schedules and availability | Read , Update | Staff Management | Enter and update staff working hours and availability. |
| **FR52** | Track and log staff activity for auditing purposes | Create , Read | Staff Management | Record actions taken by staff for accountability. |
| **FR53** | Register MRI scanners and related equipment | Create | Equipment Management | Maintain a list of all imaging equipment in the system. |
| **FR54** | Track equipment usage and maintenance schedules | Read , Update | Equipment Management | Log scan usage and schedule servicing. |
| **FR55** | Log calibration records and service history | Create | Equipment Management | Record all calibration and maintenance events. |
| **FR56** | Generate reminders for upcoming maintenance | Create | Equipment Management | Notify admin when equipment is due for service. |
| **FR57** | Track inventory levels of contrast agents and consumables | Read , Update | Inventory Management | Monitor stock levels of essential items. |
| **FR58** | Record stock in/out transactions | Create , Read | Inventory Management | Log inventory changes manually or via barcode scanner. |
| **FR59** | Generate alerts for low inventory | Read | Inventory Management | Notify admin when stock falls below threshold. |
| **FR60** | Store supplier details and contacts | Create , Read | Inventory Management | Maintain supplier profiles with contact info. |
| **FR61** | Report on inventory usage and wastage | Read | Inventory Management | View and export inventory usage reports. |
| **FR62** | Display overall system statistics in an admin dashboard | Read | Admin Dashboard and Management | Show scan volume, appointments, and billing KPIs on dashboard. |
| **FR63** | Manage user accounts and roles | Create , Read , Update | Admin Dashboard and Management | Central page to edit account info and access rights. |
| **FR64** | Oversee all scheduled appointments and workflow | Read | Admin Dashboard and Management | View daily appointment calendar and workflow steps. |
| **FR65** | View financial summaries and payment reports | Read | Admin Dashboard and Management | Show revenue and transaction summaries. |
| **FR66** | Configure system settings and preferences | Update | Admin Dashboard and Management | Change basic system settings like time zone and logo. |
| **FR67** | Generate daily, weekly, and monthly scan volume reports | Read | Reporting and Analytics | Create scan count reports for selected date ranges. |
| **FR68** | Produce financial and billing summaries | Read | Reporting and Analytics | Download reports showing revenue breakdowns. |
| **FR69** | Export reports in PDF or CSV format | Read | Reporting and Analytics | Allow export of data reports in user-friendly formats. |
| **FR70** | Enforce secure user authentication and access controls | Read , Update | Security and Audit | Require login with password and restrict access based on roles. |
| **FR71** | Encrypt patient data at rest and in transit | Update | Security and Audit | Use SSL and database encryption for security. |
| **FR72** | Log all user activities for audit and compliance | Create , Read | Security and Audit | Record access and changes to sensitive data. |
| **FR73** | Enforce role-based permissions for accessing sensitive data | Read , Update | Security and Audit | Only allow authorised users to access confidential information. |
| **FR74** | Generate detailed audit trails to meet regulatory standards (HIPAA/GDPR) | Create , Read | Security and Audit | Generate basic user activity logs to meet compliance requirements |
| **FR75** | Manage static site content such as About Us, Contact, and FAQs pages | Create , Update | Content Management | Admin can edit and update static content like about us and contact pages. |
| **FR76** | Upload patient instructions for MRI preparation | Create | Content Management | Upload patient preparation document in pdf format for MRI scans. |
| **FR77** | Update service details and pricing | Update | Content Management | Admin access to update service name and pricings. |
| **FR78** | Post announcements or alerts to the patient portal | Create | Content Management | Enable admin to post announcement to display on patient portal |