



Lab 3

IT314: SOFTWARE ENGINEERING PROJECT

GROUP:31

Project Title: Swasthya Sarathi

Team Details

Student ID	Name
202201464	Mayank Parmar
202201522	Arnold Mochahari
202201484	Jaikrit Sanandiya
202201481	Anuj valambhiya
202201474	Jeet Desai
202201463	Harsh Popatiya
202201487	Nandini Mandaviya
202201511	Aryan Patel
202201493	Harsh Lad
202201521	Jemini Chaudhari

Task 3: Function Point Estimation

Complexity Factor Calculation:

Complexity factor	value
Reliable backup and recovery	3
Data Communication	2
Distributed Processing Function	3
Performance	3
Operational Environment	4
Online Data Entry	3
Transaction Rate	2
Complex ip/op and inquires	3
Complexity of internal Processing	4
Reusability	3
Conversion and installation	2
Multiple installation	2
Ease of use	3
Online data entry for multiple screens and operations	3
Sum of all Factors	40

Complexity Factor = $0.65 + 0.01 * (\text{sum of all factors})$

CF = $0.65 + 0.01 * (40)$

CF = 1.05

Assumptions:

- We have assumed this to be a medium sized project and it can take 7-12 hours per Function point.
- For convention we assumed that it will take 7 hours per FP.
- So, Productivity rate = 7 Hours.

Sprint 1: Registration and Authentication

Main Sprint Name: Registration and Authentication

Functionalities:

1. User Registration
2. Login
3. Password Recovery
4. Role Selection
5. Password Encryption & Secure Data Storage
6. Profile Verification
7. Hospital Registration

Function Point Analysis for Sprint 1:

Parameters	Count	Weighting Factor	Complexity	Total Points
External Inputs (EI)	10	3	Medium	30
<i>Examples:</i> Registration forms, login forms, password recovery requests, role selection input, hospital registration input.				
External Outputs (EO)	8	4	Medium	32
<i>Examples:</i> Login confirmation, registration confirmation, password reset emails, role-based dashboard displays, verification status updates.				
External Inquiries (EQ)	4	3	Low	12

Examples: Queries for user credentials, checking for duplicate emails, retrieving role-specific features, verifying medical license.

Internal Logical Files (ILF)	7	7	High	49
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Examples: User profiles, password storage (encrypted), role details, verification records, hospital profiles.

External Interface Files (EIF)	3	5	Medium	15
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Examples: Integration with Google authentication, email systems for password recovery, verification services for medical licenses.

➤ Total Function Points for Sprint 1:

Unadjusted FP = 138

Adjusted FP = UFP*CF

Adjusted FP = 138*1.05

Adjusted FP = 144.9

Estimated time = FP*(Productivity Rate)

Estimated time = 144.9*7 = 1014.3 hours

Sprint 2: Medical History and Documentation

Main Sprint Name: Medical History and Documentation

Functionalities:

1. View Complete Medical History
 2. Generate Medical Certificates
 3. Sort Medical History by Timeline
 4. View Medical History Across Different Doctors/Hospitals
 5. Secure Medical Report Access
 6. Hospital Search
 7. Navigation Bar for Healthcare Management
 8. Multi-Device Login
 9. Logout Functionality
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Function Point Analysis for Sprint 2:

Parameters	Count	Weighting Factor	Complexity	Total Points
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External Inputs (EI)	9	4	Medium	36
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Examples: Patient ID input, medical certificate creation, sorting options, hospital search inputs, multi-device login.

External Outputs (EO)	8	4	Medium	32
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Examples: Medical history displays, generated medical certificates, sorted timelines, history across doctors/hospitals, search results.

External Inquiries (EQ)	5	4	Medium	20
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Examples: Queries for medical history details, search queries for hospitals, checking prescription details.

Internal Logical Files (ILF)	9	7	High	63
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Examples: Patient medical history, certificates, sorted records, access logs, multi-device session data.

External Interface Files (EIF)	3	5	Medium	15
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Examples: Integration with email/SMS services, external authentication systems, search engine integration.

➤ **Total Function Points for Sprint 2:**

Unadjusted FP = 166

Adjusted FP = UFP*CF

Adjusted FP = 166* 1.05

Adjusted FP = 174.3

Estimated time = FP*(Productivity Rate)

Estimated time = 174.3*7= 1220.1 hours

Sprint 3: Record Management and Billing

Main Sprint Name: Record Management and Billing

Functionalities:

1. Update/Add/Delete Records
2. Generate Bills
3. Add/Update Medical Prescriptions
4. Add Prescription to Patient's History
5. Manage Medical Invoices

- 6. Link Entries for Integrated View
- 7. Comprehensible Prescription Format

Function Point Analysis for Sprint 3:

Parameters	Count	Weighting Factor	Complexity	Total Points
External Inputs (EI)	7	5	High	35
<i>Examples:</i> Record updates, bill generation inputs, prescription additions, invoice management, linking entries.				
External Outputs (EO)	6	4	Medium	24
<i>Examples:</i> Updated records, generated bills, updated prescriptions, medical history updates, printed invoices.				
External Inquiries (EQ)	4	3	Low	12
<i>Examples:</i> Queries for updated records, prescription details, invoice details.				
Internal Logical Files (ILF)	8	7	High	56
<i>Examples:</i> Patient records, billing details, prescriptions, linked entries.				
External Interface Files (EIF)	2	5	Medium	10
<i>Examples:</i> Integration with billing systems, external databases for record linking.				

➤ **Total Function Points for Sprint 3:**

Unadjusted FP = 137

Adjusted FP = UFP*CF

Adjusted FP = 137* 1.05

Adjusted FP = 143.85

Estimated time = FP*(Productivity Rate)

Estimated time = 143.85*7= 1006.95 hours

Sprint 4: Prescription Management and Patient Records

Main Sprint Name: Prescription Management and Patient Records

Functionalities:

1. View Medical History by Patient ID
2. Add/Update Patient Prescriptions
3. Add Medical Prescription Form to Patient History
4. Manage Medical Invoices
5. Link Entries for Integrated View
6. Comprehensive Prescription Format

Function Point Analysis for Sprint 4:

Parameters	Count	Weighting Factor	Complexity	Total Points
External Inputs (EI)	6	5	High	30
<i>Examples:</i> Patient ID input, prescription updates, invoice management, prescription format.				
External Outputs (EO)	5	4	Medium	20
<i>Examples:</i> Medical history by patient ID, updated prescriptions, added prescription forms, invoices.				
External Inquiries (EQ)	3	3	Low	9
<i>Examples:</i> Queries for patient history, prescription details.				
Internal Logical Files (ILF)	6	7	High	42
<i>Examples:</i> Patient medical records, prescriptions, invoices.				
External Interface Files (EIF)	2	5	Medium	10
<i>Examples:</i> Integration with prescription systems, external databases.				

➤ Total Function Points for Sprint 4:

Unadjusted FP = 111

Adjusted FP = UFP*CF

Adjusted FP = 111* 1.05

Adjusted FP = 116.55

Estimated time = FP*(Productivity Rate)

Estimated time = 116.55*7= 815.85 hours

Sprint 5: Hospital Search and Website Compatibility

Main Sprint Name: Hospital Search and Website Compatibility

Functionalities:

- 1. Search for Hospitals by Name
- 2. Filter Hospitals by Location
- 3. Filter Hospitals by Specialty
- 4. Cross-Browser Compatibility
- 5. Mobile Responsiveness

Function Point Analysis for Sprint 5:

Parameters	Count	Weighting Factor	Complexity	Total Points
External Inputs (EI)	6	4	Medium	24
<i>Examples:</i> Hospital search inputs, location and specialty filters.				
External Outputs (EO)	6	4	Medium	24
<i>Examples:</i> Search results, filtered hospital lists.				
External Inquiries (EQ)	4	4	Medium	16

Examples: Queries for hospital details, location-based searches.

Internal Logical Files (ILF)	5	6	Medium	30
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Examples: Hospital records, search filters, location data.

External Interface Files (EIF)	2	5	Medium	10
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Examples: Integration with location services, search engines.

➤ Total Function Points for Sprint 5:

Unadjusted FP = 104

Adjusted FP = UFP*CF

Adjusted FP = 104* 1.05

Adjusted FP = 109.2

Estimated time = FP*(Productivity Rate)

Estimated time = 109.2*7 = 764.4 hours

Sprint 6: Appointment Management and Feedback

Main Sprint Name: Appointment Management and FeedbackFunctionalities:

1. Book Appointments
2. View Doctor Appointments
3. View and Manage Schedules
4. Enter Appointment Timings
5. Send Appointment Reminders

6. Collect and Review Patient Feedback

Function Point Analysis for Sprint 6:

Parameters	Count	Weighting Factor	Complexity	Total Points
External Inputs (EI)	7	5	High	35
<i>Examples:</i> Appointment bookings, schedule inputs, feedback entries.				
External Outputs (EO)	6	4	Medium	24
<i>Examples:</i> Appointment confirmations, schedule views, reminders, feedback reports.				
External Inquiries (EQ)	5	4	Medium	20
<i>Examples:</i> Queries for appointment details, schedule availability.				
Internal Logical Files (ILF)	7	7	High	49

Examples: Appointment records, schedules, feedback data.

External Interface Files (EIF)	3	5	Medium	15
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Examples: Integration with SMS/email services for reminders, feedback systems.

➤ **Total Function Points for Sprint 6:**

Unadjusted FP = 143

Adjusted FP = UFP*CF

Adjusted FP = 143* 1.05

Adjusted FP = 150.15

Estimated time = FP*(Productivity Rate)

Estimated time = 150.15*7 = 1051.05 hours

Total Function point for all Sprints:

Total FP = FP1 + FP2 + FP3 + FP4 + FP5 + FP6

Total FP = 144.9 + 174.3 + 143.85 + 116.55 + 109.2 + 150.15

Total FP = 838.95