SOFTWARE ENGINEERING

Estimation Report

Pharmacy Management System

Submitted to

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1.Size Estimation (Function Point Metrics):

Step 1: Estimating the variables and Calculating UFP for the FP Metric of size estimation

Inputs- 6

Update sales details : Simple

Update Medicine details: simple

Update Stock details:simple

User Authentication: Average

Company details: Average

Inventory updates: Average

Output- 4

Sales Report : Simple

Display customer bill : Simple

Display medicine position : Average

Display stock (with filters) : Complex

Inquiries- 2

Order Status : Simple

Check drug availability : Average

Files- 3

Medicines database : Average

Customer database: Average

Inventory database: Average

Interface- 1

Interface with EHR systems & insurance providers : Average

UFP = (Number of inputs)*4 + (Number of outputs)*5 + (Number of inquiries)*4 +

(Number of files)*10 + (Number of interfaces)*7

= 6*4 + 4*5 + 2*4 + 3*10 + 1*7

= 89

Step 2: Calculating the Refined UFP based on the complexities of all the variables:

	Simple	Average	Complex
Input	3	3	0
Output	2	1	1
Inquires	1	1	0
Files	0	3	0
Interface	0	1	0

Refined UFP = (3*3 + 3*4) + (2*4 + 1*5 + 1*7) + (1*3 + 1*4) + (3*10) + (1*7)

= 85

Step 3: Calculating DI, TCF and FP

Average DI= 14*4=56

TCF = (0.65 + 0.01*DI)

= (0.65 + 0.01*56)

= 1.21

FP = UFP * TCF

= 85 * 1.21

= 102.85

2.Effort and Development Time Estimation (COCOMO Model):

LOC Estimation:

1. Signup : 200 LOC
2. Login: 150 LOC
3. Home Page: 500 LOC
4. Enquiry details : 350 LOC
5. UI/UX Design & Development : 500 LOC
6. Backend API Development : 600 LOC
7. Miscellaneous : 650 LOC

Therefore, the LOC is approximately 2950 . So, KLOC= 2.95

Effort = $2.4* (KLOC)^{1.05}$ PM

$= 2.4 * (2.95)^{1.05}$ PM

= 7.4735 PM

Tdev = $2.5 (Effort)^{0.38}$ Months

$= 2.5 * (7.4735)^{0.38}$ Month

= 5.3688 Months

3. Project schedule breakdown (Activity network and PERT chart)

The Activity Network Representation:

Task Number	Task	Duration (days)	Task Dependency
T1	Define project scope and requirements	10	-
T2	Design system architecture and database schema	15	T1
T3	Develop backend functionality	15	T2
T4	Develop frontend functionality	10	T2
T5	Perform unit testing and bug fixing	10	T3,T4
T6	Integrate backend and frontend	15	T5
T7	Perform system testing and debugging	20	T6
T8	Obtain necessary certifications and approvals	10	T7
T9	Deploy system to production environment	10	T8

The Activity Network

```
           ┌─────────────────────┐
           │ Define Project Scope│
           │   & Requirements    │
           │         10          │
           └─────────────────────┘
                      │
                      ▼
           ┌─────────────────────┐
           │    Design system    │
           │    Architecture     │
           │         15          │
           └─────────────────────┘
                      │
         ┌────────────┴────────────┐
         ▼                         ▼
┌──────────────────┐   ┌──────────────────┐
│ Develop Backend  │   │ Develop Frontend │
│  Functionality   │   │  Functionality   │
│        15        │   │        10        │
└──────────────────┘   └──────────────────┘
         │                         │
         └──────►┌──────────────┐◄─┘
                 │Unit testing  │
                 │  & bug fixing│
                 │      10      │
                 └──────────────┘
                        │
                        ▼
                 ┌──────────────┐
                 │Integrate     │
                 │Backend &     │
                 │Frontend      │
                 │     15       │
                 └──────────────┘
                        │
                        ▼
                 ┌──────────────┐
                 │Perform system│
                 │testing &     │
                 │debugging     │
                 │     20       │
                 └──────────────┘
                        │
                        ▼
                 ┌──────────────┐
                 │Obtain        │
                 │necessary     │
                 │certifications│
                 │& approvals   │
                 │     10       │
                 └──────────────┘
                        │
                        ▼
                 ┌──────────────┐
                 │Deploy system │
                 │to production │
                 │environment   │
                 │     10       │
                 └──────────────┘
```
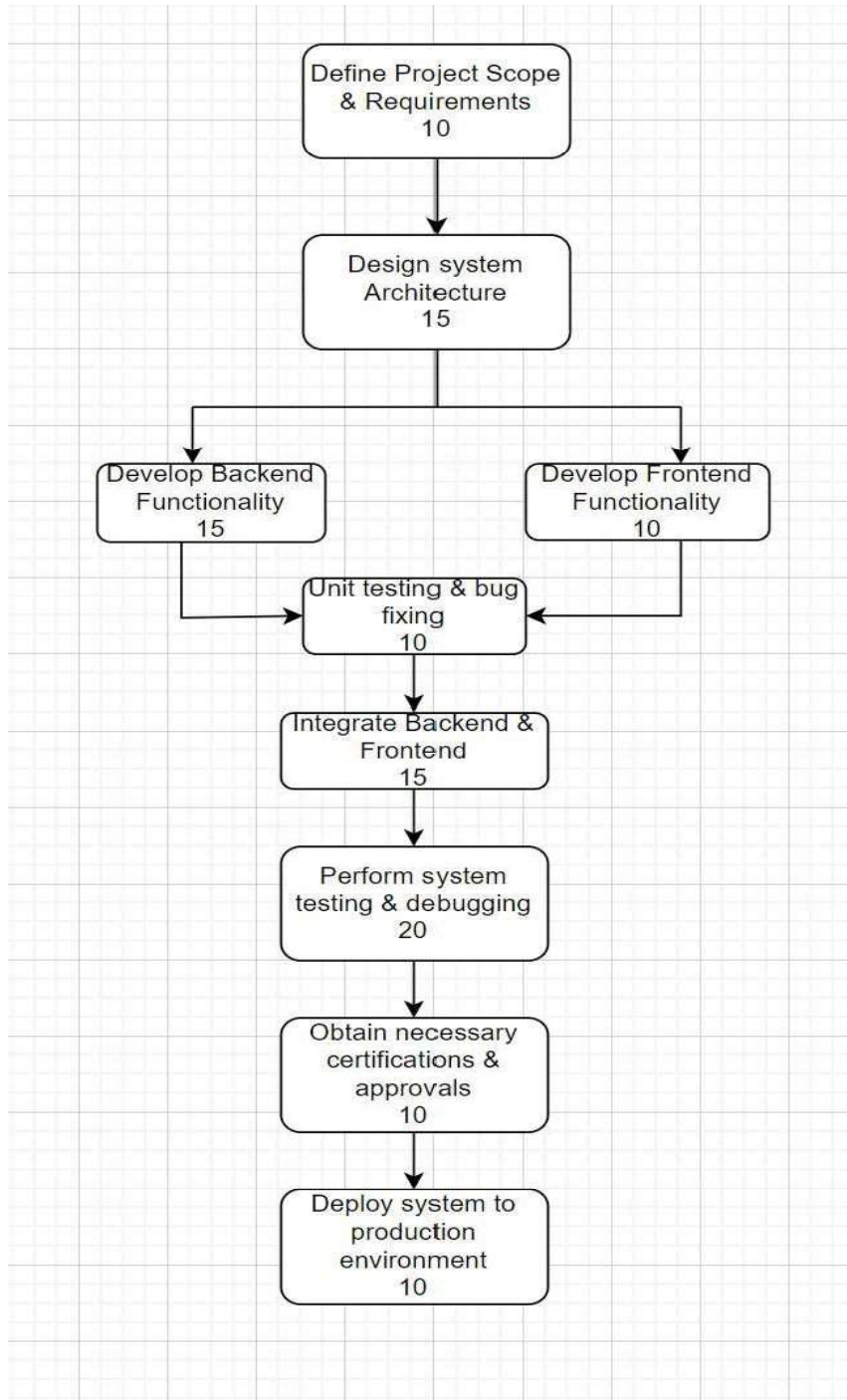
Projected Parameters Computed from Activity Network

Task	Early Start	Early Finish	Latest Start	Latest Finish	Slack Time
T1	0	10	0	10	0
T2	10	25	10	25	0
T3	25	40	25	40	0
T4	25	30	25	30	0
T5	30	30	35	35	5
T6	40	40	35	45	5
T7	50	50	45	55	5
T8	60	60	55	65	5
T9	70	65	65	70	5

The PERT Chart