

RESTAURANT WEBSITE

TABLE BOOKING - FOOD ORDERING



SOFTWARE PROJECT MANAGEMENT REPORT

SOFTWARE ENGINEERING LAB

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1.0. Size Estimation (Function Point Metrics)

1.1. Estimating the variables and Calculating UFP for the FP Metric of size estimation

External Inputs(EI):

- Phone number, Username, Password(During registration) [**Average**]
- Phone number and Password(During Login) [**Average**]
- New Password (During forget the password) [**Average**]
- Phone number, Username, Password (Admin updating the entry) [**Average**]
- Menu items and their cost (Admin updating the entry) [**Average**]

Number of external Inputs: 5

External Outputs(EO):

- Confirmation or error message during registration [**Low**]
- Confirmation or error message during change of password [**Low**]
- Confirmation or error message while order is being placed [**Low**]
- Confirmation message on order being delivered [**Low**]
- Confirmation or error message whether table is booked [**Low**]
- Displaying live location of the delivery guy [**Average**]

Number of External Outputs: 6

External Inquiries(EI):

- Phone number (During forget the password) [**Low**]
- OTP (During forget the password) [**Low**]
- Table number and time (During table booking) [**Low**]
- Order ID(During delivery tracking) [**High**]

Number of External Inquiries: 4

Internal Logical Files(ILF):

- User details [**High**]
- Food menu [**Average**]
- Table list [**Average**]

Number of Logical interface files: 3

External Interface Files(EIF):

- API for tracking the live location of the delivery guy [**Average**]

Number of External interface files: 1

Unadjusted function points(UFP) = $5*4 + 6*5 + 4*4 + 3*10 + 1*10 = 106$

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1.2. Calculating the Refined UFP based on the complexities of all the variables

Type	Low	Average	High	Total
External Inputs	0	5	0	5
External Outputs	5	1	0	6
External Inquiries	3	0	1	4
Internal Logical Files	0	2	1	3
External Interface Files	0	1	0	1

Type	Low	Average	High
External Inputs	3	4	6
External Outputs	4	5	7
External Inquiries	3	4	6
Internal Logical Files	7	10	15
External Interface Files	5	7	10

$$\begin{aligned}\text{Refined UFP} &= (0*3 + 5*4 + 0*6) + (5*4 + 1*5 + 0*7) + (3*3 + 0*4 + 1*6) + (0*7 + 2*10 + 1*15) + \\ &\quad (0*5 + 1*7 + 0*10) \\ &= 5*4 + 5*4 + 1*5 + 3*3 + 1*6 + 2*10 + 1*15 + 1*7 \\ &= 102\end{aligned}$$

3.3. Calculating DI, TCF, and FP

$$\text{Degree of influence(DI)} = 14 * 4 = 56$$

$$\begin{aligned}\text{Technical complexity factor(TCF)} &= 0.65 + (0.01 * 56) \\ &= 0.65 + 0.56 \\ &= 1.21\end{aligned}$$

$$\begin{aligned}\text{Function point(FP)} &= \text{UFP} * \text{TCF} \\ &= 102 * 1.21 \\ &= 123.42\end{aligned}$$

2.0. Effort and Development Time Estimation (COCOMO Model)

2.1. Constructive Cost Model (COCOMO)

Boehm postulated that any software development project can be classified into one of the following three categories based on the development complexity—organic, semidetached, and embedded. This project belongs to the **organic** category.

2.2. General form of the COCOMO expressions

The basic COCOMO model is a single variable heuristic model that gives an approximate estimate of the project parameters. The basic COCOMO estimation model is given by expressions of the following forms:

$$\begin{aligned}\text{Effort} &= a_1 \times (\text{KLOC})^{a_2} \text{ PM} \\ \text{Tdev} &= b_1 \times (\text{Effort})^{b_2} \text{ Months}\end{aligned}$$

Where,

- **Effort** is the total effort required to develop the software product, expressed in person-months (PMs).
- **KLOC** is the estimated size of the software product expressed in Kilo Lines Of Code.
- **a1, a2, b1, b2** are constants for each category of software product.
- **Tdev** is the estimated time to develop the software, expressed in months.

2.3. Estimation of development effort

LOC Estimation:

- Registration: 250.
- Login: 150.
- Home page: 200.
- Food Order:
 - Menu: 350.
 - Order: 150.
- Table Reservation: 250.
- Delivery Tracking: 350.
- Delivery Status: 200.
- Miscellaneous: 600.

Therefore, the **LOC** is approximately **2500**. So, **KLOC = 2.5**.

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

$$= 2.4 * (2.5)^{1.05} \text{ PM}$$

$$= 2.4 * 2.6172 \text{ PM}$$

$$= \mathbf{6.28 \text{ PM.}}$$

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

$$= 2.5 * (6.28)^{0.38} \text{ Months}$$

$$= 2.5 * 2.01 \text{ Months}$$

$$= \mathbf{5.02 \text{ Months.}}$$

3.0. Project Schedule Breakdown (Activity Network and PERT Chart)

3.1. The Activity Network Representation

Task Number	Task	Duration (Days)	Dependent on Task
T1	Feasibility	7	-
T2	Specification	10	-
T3	Design Interface	25	T2
T4	Design Database	35	T2
T5	Code Interface	35	T3
T6	Code Database	45	T4
T7	Integrate And Test	70	T5 & T6
T8	User Manual	40	T2

3.2. The Activity Network.

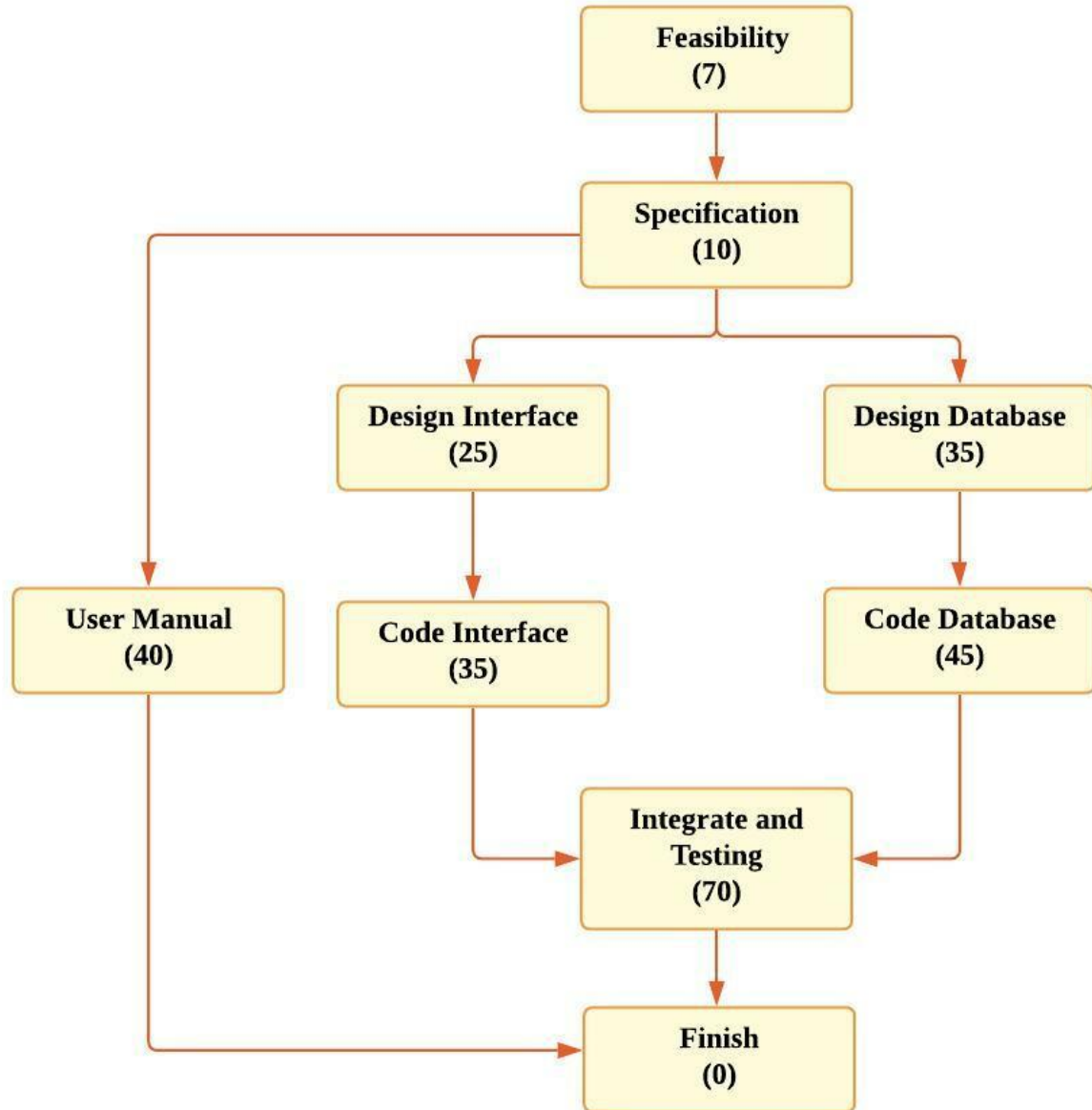


Figure 1: The Activity Network.

3.3. Projected Parameters Computed from Activity Network

Task	Early Start	Early Finish	Latest Start	Latest Finish	Slack Time
Feasibility	0	7	0	7	0
Specification	7	17	7	17	0
Design Interface	17	42	32	57	15
Design Database	17	52	17	52	0
Code Interface	42	77	62	97	20
Code Database	52	97	52	97	0
Integrate And Test	97	167	97	167	0
User Manual	17	57	127	167	110

3.4. The Project Evaluation and Review Technique (PERT) Chart

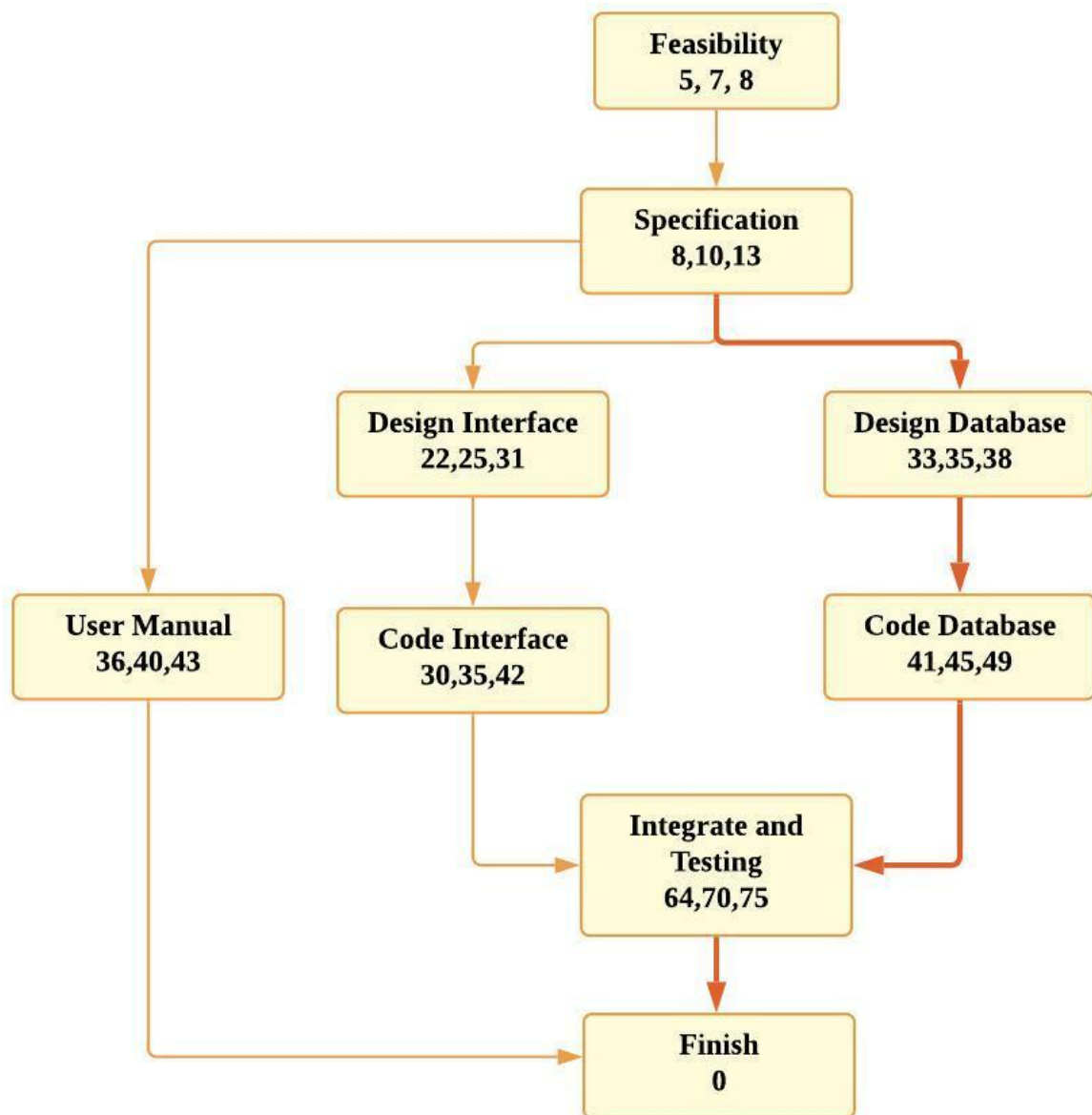


Figure 2: The PERT Chart.

3.5. Estimated Time Calculation from PERT Chart

Task	Optimistic (O)	Most Likely Estimate (M)	Worst Case (W)	Estimated Time (ET)
Feasibility	5	7	8	7
Specification	8	10	13	10
Design Interface	22	25	31	26
Design Database	33	35	38	35
Code Interface	30	35	42	35
Code Database	41	45	49	45
Integrate And Test	64	70	75	70
User Manual	36	40	43	40

**** Estimated time mentioned above is rounded to the nearest integer.**