Function Point Analysis

The Following are the Information domain from which the Function Point of the System will be calculated:

- External Inputs
  - Username
  - Password
  - Email
  - Age
  - Name
  - Login Button
  - Registration Button
  - Question
  - Answer
  - Channel URL
  - Playlist URL
- External Output
  - Recommended Courses/Tutorials
  - User Profile Information
  - Question and Answers of Forum
  - Error Prompts
- External Inquiry
  - Course/Tutorial Inquiry
  - Question Inquiry
- Internal Logical File
  - User Information
- External Interface File
  - Course/Tutorial Information

Computing Count Total

Information Domain Value	Count	Simple	Average	Complex	Total
External Inputs (EIs)	11	**3**	4	6	11*3 = 33
External Outputs (EOs)	4	4	**5**	7	4*5 = 20
External Inquires (EIs)	2	**3**	4	6	2*3 = 6
Internal Logical Files (ILFs)	1	**7**	10	15	1*7 = 7
External Logical Files (EIFs)	1	5	**7**	10	1*7 * 7
Count Total	-	-	-	-	73

Computing Value Adjustment Factors

F_i	Value	Question
1.	3	Does the system require reliable backup and recovery?
2.	5	Are specialized data communications required to transfer information to or from the application?
3.	2	Are there distributed processing functions?
4.	5	Is performance critical?
5.	2	Will the system run in an existing, heavily utilized operational environment?
6.	5	Does the system require online data entry?
7.	2	Does the online data entry require the input transaction to be built over multiple screens or operations?
8.	5	Are the ILFs updated online?
9.	4	Are the inputs, outputs, files, or inquiries complex?
10.	4	Is the internal processing complex?
11.	3	Is the code designed to be reusable?
12.	1	Are conversion and installation included in the design?
13.	5	Is the system designed for multiple installations in different organizations?
14.	3	Is the application designed to facilitate change and ease of use by the user?
Total	**49**	

Thus, the **Count Total** is equal to **73** and the **Value Adjustment Factor** is equal to $\sum F_i = 49$.

Now the Formula to calculate the **Function Points** is as follows:

$$FP = Count - Total * \left[0.65 + \left(0.01 * \sum F_i\right)\right]$$

$$\therefore FP = 73 * [0.65 + (0.01 * 49)]$$

$$FP = 83.22$$

Assuming the Organizational Average Productivity for the System of this type is **6.5 FP/person-month** and the burdened labor rate of **$8000/month** then the Productivity and Cost of the System will be

$$Effort = \frac{FP}{Productivity} = \frac{83.22}{6.5} = 12.8 \approx 13\ person - month$$

$$Cost\ per\ FP = \frac{Cost}{Productivity} = \frac{8000}{6.5} = \$1230\ per\ FP$$

$$Total\ Cost = Cost\ per\ FP * FP = \$1230 * 83 = \$102,424$$

COCOMO II Model

We will Estimate the Effort using the COCOMO II model.

The System has the following Screen:

1. Login Screen
2. Registration Screen
3. Home Screen
4. Profile Screen
5. Forum Screen
6. Course/Tutorial Screen
7. Course/Tutorial Management Screen
8. User Management Screen

The System generated the Following Reports:

1. User Information Report
2. Course/Tutorial Report
3. User Profile Report

The System has the following 3GL components:

1. Login/Register Module
2. User Management Module
3. Course/Tutorial Module

Now we will calculate the Object Point Using the Complexity Weight of Different Objects given by the following table

Object type	Complexity weight		
	Simple	Medium	Difficult
Screen	1	2	3
Report	2	5	8
3GL component			10

Name	Object Type	Complexity	Weight
Login Screen	Screen	Simple	1
Registration Screen	Screen	Simple	1
Home Screen	Screen	Medium	2
Profile Screen	Screen	Medium	2
Forum Screen	Screen	Medium	2

Course/Tutorial Screen	Screen	Medium	2
Course/Tutorial Management Screen	Screen	Medium	2
User Management Screen	Screen	Medium	2
User Information Report	Report	Simple	5
Course/Tutorials Report	Report	Medium	2
User Profile Report	Report	Simple	5
Login/Register Module	3GL	Difficult	10
User Management Module	3GL	Difficult	10
Course/Tutorial Management Module	3GL	Difficult	10
Total			56

Thus, the **Object Count Total** is 56. Assuming that the % of reuse of the existing components or software is **5%,** the **New Object Point (NOP)** can be calculated as follows:

$$\boldsymbol{NOP = (Object\ Points) * [(100 - \%resuse)/100]}$$

$$\boldsymbol{\therefore NOP = (56) * \left[\frac{100 - 5}{100}\right] = 53.2}$$

Now we have NOP so we will **Estimate of Effort based on computed NOP.** The Productivity Rate, Effort and NOP has the following relation:

$$\boldsymbol{PROD = \frac{NOP}{Effort}}$$

We will use the following table for the Productivity Rate considering Developer's Experience and Environment Maturity.

Developer's experience/capability	Very low	Low	Nominal	High	Very high
Environment maturity/capability	Very low	Low	Nominal	High	Very high
PROD	4	7	13	25	50

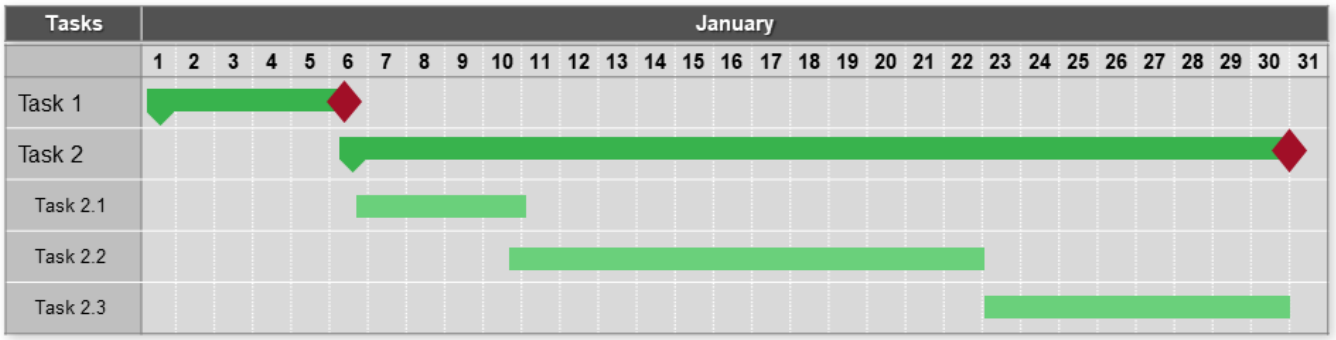
Considering that **Developer's Experience is Nominal** and Environment **Maturity is Low**, the value of **PROD** will be:

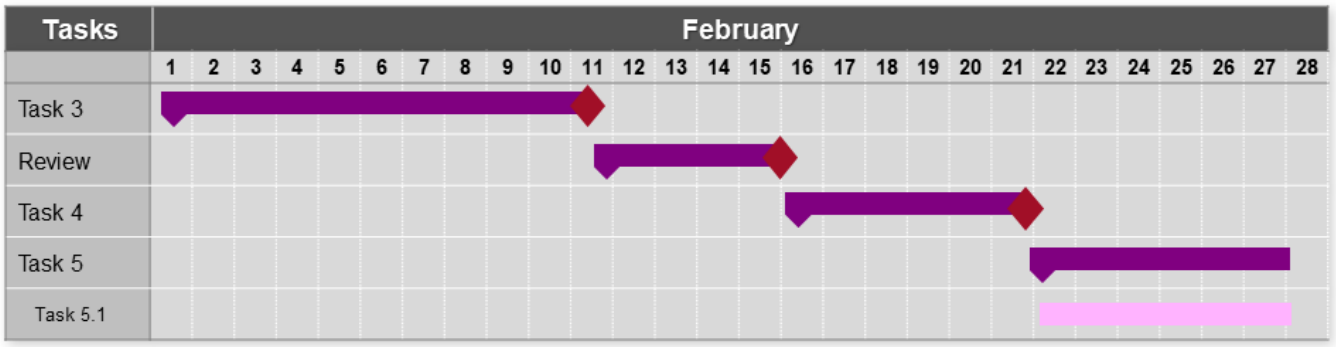
$$\boldsymbol{PROD = \frac{13 + 7}{2} = 10}$$

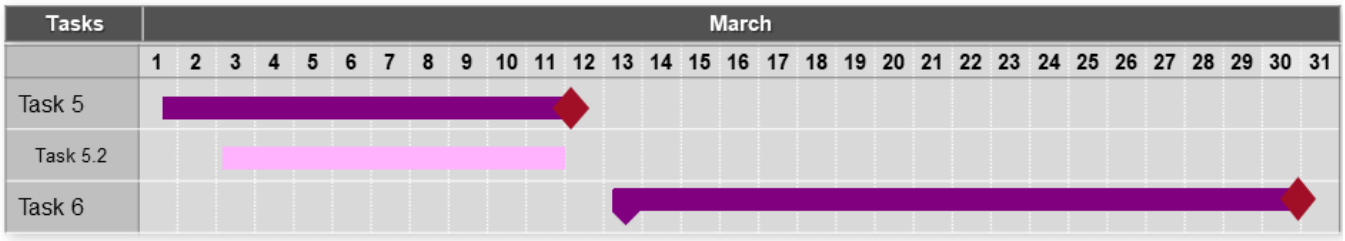
Thus, by using the PROD, NOP and Effort relation the Estimate of the Effort will be:

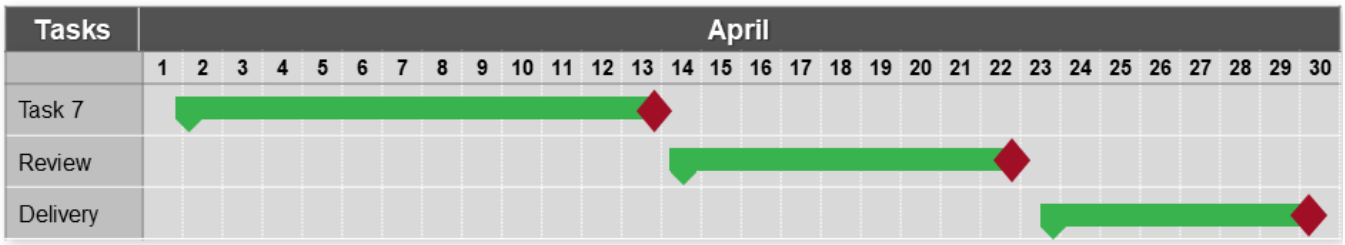
$$\boldsymbol{Effort = \frac{NOP}{PROD} = \frac{53.2}{10} = 5.32 \approx 5\ person - month}$$

Time Line Chart









Milestone - 

Project Table

Tasks	
Task 1	Communication – Identify Needs, Meet with Customer and Deveop Product Statement
Task 2	Gathering Requirements and creating SRS
Task 2.1	Gathering Requirements from the Customer
Task 2.2	Developing Use Cases, Data Dictionary and DFD
Task 2.3	Constructing SRS
Task 3	Project Estimation (Cost and Time) – Function Point Analysis and COCOMO II Estimation
Review	Review 1
Task 4	Risk Management
Task 5	Designing the System
Task 5.1	Developing Structure Charts
Task 5.2	Designing the Database and the User interface
Task 6	Development Stage – Developing the System (Coding)
Task 7	Testing Phase
Review	Review 2
Delivery	Delivery to the Customer