Chapter 4

System Planning

4.1 Function of Proposed System:

Table I. Function of Proposed System

Login into the System	F1
Customer Registration	F2
View Products	F3
Add To cart Products	F4
Update Products	F5
Delete Products	F6
Checkout Orders	F7
Invoice	F8
Order Status	F9
Add Products	F10
Add Stuffs	F11
Remove Stuffs	F12
Add layouts	F13
Update layouts	F14
Order Information	F15
Generate Report	F16

4.2 Functions Description

- **F1 Login into the System:**

  Input: User Name, Password, Type

  Output: Login Successful, Login Failed

- **F2 Customer Registration:**

  Input: First Name , Username,Email,Password,Confirm
  Password,Mobile1,Mobile2,Address

  Output: Success

  Use table of the database: tbl_user

- **F3 View Products:**

  Output: Product Category, Product type, Availability,Price,Discount,Specifications.

  Use table of the database: tbl_product.

- **F4 Add To cart Products:**

  Input: User id, Product id, Quantity, Product Price,Total Price .

  Output: Success

  Use table of the database: tbl_cart

- **F5 Update Product:**

  Input: Product Quantity

  Output: Success.

  Use table of the database: tbl_cart

- **F6 Delete Product:**

  Input: Remove Product

  Output: Success.

  Use table of the database: tbl_cart

- **F7 Checkout Order:**

  Input: Name,Mobile1,Mobile2,Address,Email

  Output: Success.

  Use table of the database: tbl_order.

- **F8 Invoice:**

  Output: Ordered Products and Price

  Use table of the database: tbl_invoice.

- **F9 Order Status:**

Output: Purchase Products and their Delivery Status.

Use table of the database: tbl_invoice

- **F10 Add Products:**

  Input: name,Code ,Solditems,Buying
  Price,Price,Discount,Quantity,Newarrival,catgory,Type,Image1,Image2,Image3,Status,Specifications.

  Output: Success.

  Use table of the database: tbl_product

- **F11 Add Stuffs:**

  Input:Name,username,phone,email,password,confirmpassword.

  Output: Purchase Products and their Delivery Status.

  Use table of the database: tbl_admin

- **F12 Remove Stuffs:**

  Input: Remove

  Output: Success

  Use table of the database: tbl_admin

- **F13 Add layouts:**

  Input: Image1,Image2,Imag3

  Output: Success

  Use table of the database: tbl_image

- **F14 Update layouts:**

  Input: Image1,Image2,Imag3

  Output: Success

Use table of the database: tbl_image

- **F15 Order Information:**

  Output: View Order Details

  Use table of the database: tbl_order

- **F16 Generation Report:**

  Output: View Report

  Use table of the database: tbl_order

4.3 Project Planning

Before starting any project, it is compulsory to estimate the work to be done, the resources that will be required, the time that will elapse from start to finish and to analyze the project to determine whether it is feasible or not.

The following activities of software project planning that have followed in this project are:

- Estimation of the software project

- Task scheduling

- Personnel requirements

- Resource requirements

- Estimation of the software cost

- Costs benefit analysis

4.4 Function Point Estimation

The task of counting function points should be included as part of the overall project plan. That is, counting function points should be scheduled and planned. The first function point count should be developed to provide sizing used for estimating.

4.5 Function Oriented Metrics

Function point based estimation focuses on information domain values rather that software values. Function points are computed by comparing five information domain characteristics. The information domain values are as follows

Number of external inputs – Each user input that provides distinct application-oriented data to the software is counted inputs should be distinguished from inquires.

Number of external outputs – Each user output that provides application-oriented information to the user is counted.

Number of external inquires – An inquiry defined as an on-line input those results in the generation of some immediate software response in the form of an on-line output. Each distinct inquiry counted.

Number of files – Each logical master file counted.

Numbers of external interfaces – All machine-readable interfaces that used to transmit information to another system counted.

The weights of the domains are fixes, which are provided in appropriate table location. Weights can be divided into three categories according to the functionality of the system. They are simple, average and complex. The total system is a complex system but the part of the total system. Once these data has collected, a complexity value is associated with each count.

To find out the FP count the following formula is used,

FP Count = (((4 * Most Likely) + Optimistic + Pessimistic) / 6) * Weight)

To compute function points (FP), the following relationship is used:

FP = Count Total * [0.65 + 0.01 * Σ (Fi)]

Complexity adjustment factor = [0.65+0.01*Sum of factor values]

FP estimated =count total*Complexity adjustment factor.

Function Point Estimation = Total FP estimated/No. of function point.

The count total is the sum of all FP entries. (softwaremetrics, 2018)

- ➢ **FP count:**

Table II. FP Count

Domain	Optimistic	Likely	Pessimistic	Est. Count	Weight	FP Count
Number of External Input	9	4	11	6.00	3	18.00
Number of External Output	20	8	20	12.00	4	48.00
Number of External Inquiries	6	3	6	4.00	3	12.00
Number of Internal Logical Files	24	13	20	16.00	7	112.00
Number of External Interface	15	7	11	9.00	5	45.00
Count Total:						235.00

- ➢ **Complexity adjustment value:**

Table III. Complexity Adjustment Value

Number	Factor	Value
1	Does the system require reliable backup and recovery?	2
2	Are specialized data communications required?	3
3	Are there any distributed processing functions?	0

4	Is performance critical?	1
5	Does the system run in existing operational environment?	0
6	Does the system require off-line data entry?	3
7	Input transaction over multiple screens	0
8	Are the master files updated on-line?	2
9	Are the input, output, files or inquiries complex?	0
10	Is the internal processing complex?	0
11	Is the code designed to be reusable?	4
12	Are conversations or installation included in the design?	0
13	Is multiple designed for change?	0
14	Is the system designed to facilitate change and case?	4
	Σ (Fi)	19

Complexity Adjustment Factor =	0.84

FP Estimated =	197.4

4.6 Function Point Estimation

Here FP Estimated = 197.4,where the FP is estimated using the formula:

FP Estimated = Count Total * Complexity Adjustment factor.

Function Point Estimation = Total FP Estimated / No. of function point.

$$=197.4 / 16 = \textbf{12.33 man month.}$$

= 12 man month (Approximate).

Time Frame Calculation   = 12 / 04

= 3 Months   (softwaremetrics, 2018)

4.7 Process Based Estimation

In process-based estimation, process is decomposed into a relatively small set of tasks and the effort required to accomplish each task is estimated. Process based estimation begins with a delineation of software functions obtained from the project scope. A series of software process activities must be performed for each function.

Table IV. Process Based Estimation

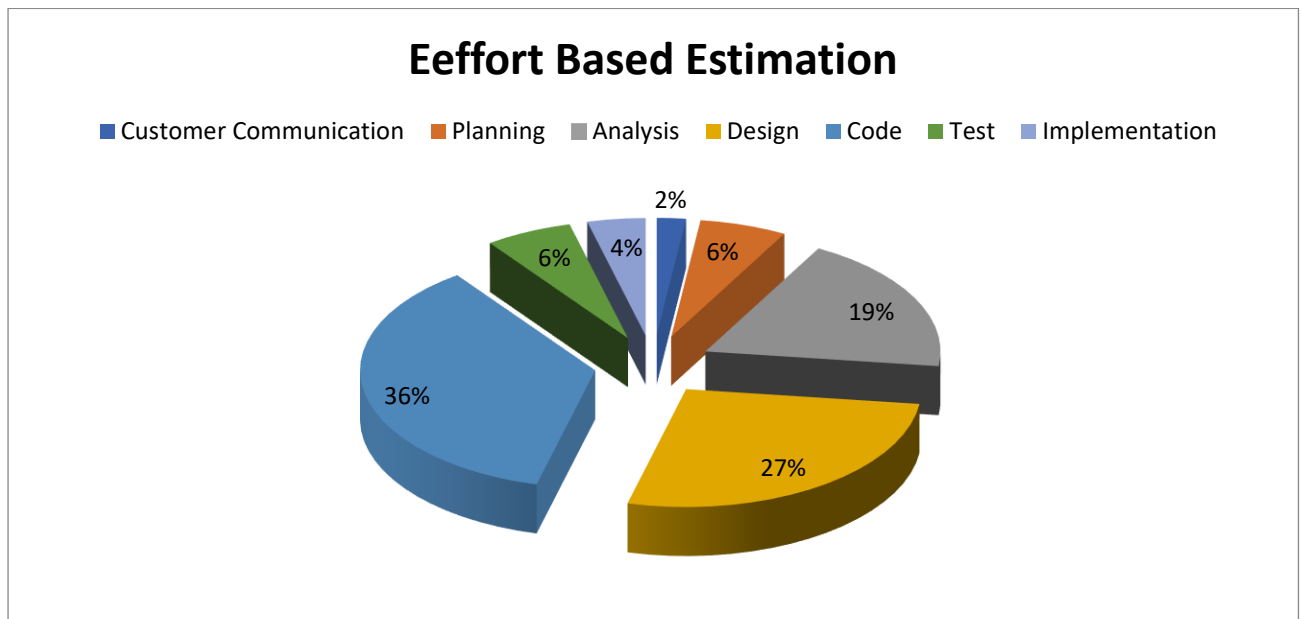| Activity	CC	Planning	Engineering		Construction		Imp.	Total
			Analysis	Design	Code	Test		
Function								
F1			0.12	0.15	1.25			
F2			0.17	0.12	1.15			
F3			0.19	0.25	0.45			
F4			0.12	0.25	0.45			
F5			0.60	0.25	0.75			
F6			0.54	0.25	0.75			
F7			0.36	0.25	0.45			
F8			0.12	0.25	0.45			
F9			0.54	0.55	1.15			
F10			0.24	1.4	2.00			
Total	1.00	1.50	3.00	3.47	8.85	1.55	0.55	19.92
Effort	2%	6%	19%	27%	36%	6%	4%	100%

4.8 Effort Estimation

Figure 4.4: Effort Based Estimation (Baracks, 2018)

4.9 Project Schedule Chart

Total system development is a combination of set of tasks. These set of tasks should done
sequentially and timely. Project schedule works as the guideline of the system developer. The
following is the schedule chart of this project:

Table V. Project Schedule Chart

Category	1st Month	2nd Month	3rd Month	4th Month
Customer Communicator	▭			
Planning	▭			
Analysis	▭			
Design		▭		

Coding			
Testing			
Implementation			

4.10 Cost Estimation

- Software Cost
- Hardware Cost
- Personnel Cost
- Other Cost

Software Cost:

Table VI. Software Cost

Name	Amount
Windows 10	50.00
MS Office 2013	50.00
XAMPP	Free
MySQL	Free
Subline Text Editor	Free
Adobe Photoshop	50.00
Total	150

It is expected that the life of hardware is 5 years. So, an asset with a life of 5 would have a sum

of digits as follows: 5+ 4+ 3 +2 + 1 = 15.

The percentage of month is: 1/15 = 6.67% = 0.0667

The depreciation cost of Computer is = (30000 * 0.0667) = 200

The depreciation cost of Scanner is = (1800* 0.0667) = 120.06

The depreciation cost of Printer is = (2200* 0.0667) = 146.74

Hardware Cost:

Table VII. Hardware Cost

Name	Amount	Depreciated Cost
Computer	30000	200
Scanner	1800	120.06
Printer	2200	146.74
	Total	2267.8

Personnel Cost:

Table VIII. Personnel Cost

Type	Number	Month	Salary Per Month	Total
System Analyst	1	2	12000	24000
Designer	1	2	10000	20000

Code Developer	1	2	8000	16000
Tester	1	1	5000	5000
			Total:	65000

Other Cost:

Table IX. Other Cost

Name/utility	Monthly Bill Rate	Bill calculated for 4 months
Electricity Bill	800	3200
Internet Bill	1000	4000
	Total	7200

Total System Development Cost:

Table X. System Development Cost

Cost Type	Cost
Software Cost	150 BDT.
Hardware Cost	2,267.8 BDT.
Personnel Cost	65,000 BDT.
Other Cost	7,200 BDT.
Total	74617.8 BDT.