**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 =**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** |
| **Function** |  |  | **Analysis** | **Design** | **Code** | **Test** |  |  |
| **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.** |