**Chapter 4**

**System Planning**

**4.1** **Function of Proposed System:**

|  |  |
| --- | --- |
|  |  |

Table I. Function of Proposed System

|  |  |
| --- | --- |
| Login into the System | F1 |
| Customer Registration | F2 |
| Customer Information | F3 |
| View Products | F4 |
| Manage Cart | F5 |
| Make Orders | F6 |
| Payment | F7 |
| Manage Orders | F8 |
| Manage Products | F9 |
| Manage Stuff | F10 |
| Manage Customer | F11 |
| Generate Report | F12 |

**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 Customer Information:**

Output: Customer’s general Information including order details and customer can see order status

Use table of the database:tbl\_user

* **F4 View Products:**

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

Use table of the database: tbl\_product.

* **F5 Mange Cart:**

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

Output: Success

Update Cart:

Input: Product Quantity.

Output: Quantity Success

Remove Product:

Output: Product will be removed.

Use table of the database: tbl\_cart

* **F6 Make Orders:**

Input: Name, Mobile1,Mobile2,Address & Email

Output: Success.

Use table of the database: tbl\_order

* **F7 Payment:**

Output: Cash on Delivery

* **F8 Manage Order:**

Input: Cancel, Returned, Delivered

Output: Success status.

Use table of the database: tbl\_order.

* **F9 Manage Product:**

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

Output: Success.

Update Product:

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

Output: Success

Update Quantity:

Input: Product Quantity

Output: Success

Use table of the database: tbl\_product

* **F10 Manage Stuff:**

Input: Name, Username,Email,Password,Confirm Password

Output: Success.

Update Stuff:

Input: Name, Phone, Email, Password, Confirm password

Delete Stuff:

Output: Stuff Delete

Use table of the database: tbl\_admin

* **F11 Manage Customer:**

Output: delete Customer.

Use table of the database: tbl\_user

* **F12 Generate Report:**

Customer:

Output: Name, Address,Email,Product code, Product name,Subtotal,Price.

Use table of the database: tbl\_invoice

Sales Report:

Output: Sales Report History

**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. (softwaremetrics, 2018)

**Data Functions:**

* + - Internal Logical Files [ILF]
    - External interface files [EIF]

**Transactional Functions:**

* + - External Inputs [EI]
    - External Outputs [EO]
    - External Queries [EQ]

Also, DET, RET and FTR have been applied for the analysis of data functions and transactional functions.

Table II**.** Complexity Matrix for FP Function Components

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ILF/EIF** |  | DET |  | **EI** |  | DET |  | **EO/EQ** |  | DET | |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| RET | 1-19 | 20-50 | 51+ | FTR | 1-4 | 5-15 | 16+ | FTR | 1-5 | 6-19 |  | 20+ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | Low | Low | Avg | 0-1 | Low | Low | Avg | 0-1 | Low | Low |  | Avg |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2-5 | Low | Avg | High | 2 | Low | Avg | High | 2-3 | Low | Avg |  | High |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6+ | Avg | High | High | 3+ | Avg | High | High | 4+ | Avg | High |  | High |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

Table III**.** Function Component Complexity Weight Assignment

|  |  |  |  |
| --- | --- | --- | --- |
| **Component** | **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 |
|  |  |  |  |

**FP count:**

Table IV. Function Point Analysis and Transection Function

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Transaction** |  | **FTRS** | **DETS** | **Complexity** | **UFP** |
| User Registration (EI) |  | 1 | 8 | Low | 3 |
| User Login (EI) |  | 1 | 2 | Low | 3 |
| User Information(EQ) |  | 1 | 5 | Low | 3 |
| Admin Login (EI) |  | 1 | 2 | Low | 3 |
| View Product (EQ) |  | 1 | 6 | Low | 3 |
| Add Product to Cart (EI) |  | 1 | 6 | Low | 3 |
| Update Product cart (EI) |  | 1 | 1 | Low | 3 |
| Remove Product from Cart (EQ) |  | 1 | 6 | Low | 3 |
| View Invoice Details (EQ) |  | 1 | 7 | Low | 3 |
| Order Details (EI) |  | 1 | 5 | Low | 3 |
| Calculate Bill (ILF) |  | 1 | 2 | Low | 7 |
| Add Product (EI) |  | 1 | 17 | Avg | 4 |
| Update Product(EI) |  | 1 | 17 | Avg | 4 |
| Delete Product(EI) |  | 1 | 1 | Low | 3 |
| Add Stuff (EI) |  | 1 | 6 | Low | 3 |
| Update Stuff (EI) |  | 1 | 5 | Low | 3 |
| Delete Stuff(EI) |  | 1 | 1 | Low | 3 |
| Add Layouts 3(EI) |  | 3 | 5 | High | 9 |
| View Report Date wise (EQ) |  | 1 | 2 | Low | 3 |
|  |  |  |  | Total | 69 |

Table V. FP Count

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Function | **RETs** | **DETs** | **Complexity** | **UFP** |
| Login (ILF) | 1 | 9 | Low | 7 |
| Admin Login (ILF) | 1 | 7 | Low | 7 |
| Product (ILF) | 1 | 16 | Low | 7 |
| Cart (ILF) | 1 | 6 | Low | 7 |
| Order (ILF) | 1 | 8 | Low | 7 |
| Invoice (EQ) | 1 | 5 | Low | 3 |
| Report (ILF) | 1 | 4 | Low | 7 |
| Search(ILF) | 1 | 2 | Low | 7 |
|  |  |  | **Total** | 53 |

**Performance and environmental impact:**

|  |  |
| --- | --- |
| **GSC** | **DI** |
| **Data Communications** | **3** |
| **Distributed Data Processing** | **0** |
| **Performance** | **5** |
| **Heavily Used Configuration** | **3** |
| **Transaction Rate** | **3** |
| **Online Data Entry** | **4** |
| **End-user Efficiency** | **5** |
| **Online Update** | **0** |
| **Complex Processing** | **3** |
| **Reusability** | **3** |
| **Installation Ease** | **4** |
| **Operational Ease** | **3** |
| **Multiple Site** | **0** |
| **Facilitate Change** | **4** |
| **Total Degree of Influence (TDI)** | **40** |

**4.5** **Function Point Estimation**

UFP for TF = 69

UFP for DF = 53

Total UFP = 122

Value Adjustment Factor (VAF) = (0.65+ (0.01×40))

* + 1.05

Adjusted Function Point (AFP) = UFP × VAF

* 122× 1.05
* 124.65

Efforts for PHP = AFP × Productivity

* 124.65× 15.5

= 1932.075 person hours/6 hours

= 322.012 person days / 20 = 16.10 person month

Time Frame Calculation = 16.10/4=4.02

4.02 ≈ 4 month needed for 4 persons

**4.6** **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. (softwaremetrics, 2018)

Table VI. Process Based Estimation

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Activity** | **CC** | **Planning** | **Engineering** | | **Construction** | | **CE** | **Total** |
| **Function** |  |  | **Analysis** | **Design** | **Code** | **Test** | n/a |  |
| **F1** |  |  | 0.12 | 0.15 | 1.25 | 0.3 | n/a | 1.82 |
| **F2** |  |  | 0.17 | 0.12 | 1.15 | 0.3 | n/a | 1.74 |
| **F3** |  |  | 0.19 | 0.25 | 0.45 | 0.3 | n/a | 1.19 |
| **F4** |  |  | 0.12 | 0.25 | 0.45 | 0.3 | n/a | 1.12 |
| **F5** |  |  | 0.60 | 0.25 | 0.75 | 0.3 | n/a | 1.9 |
| **F6** |  |  | 0.54 | 0.25 | 0.75 | 0.3 | n/a | 1.84 |
| **F7** |  |  | 0.36 | 0.25 | 0.45 | 0.3 | n/a | 1.36 |
| **F8** |  |  | 0.12 | 0.25 | 0.45 | 0.3 | n/a | 1.32 |
| **F9** |  |  | 0.54 | 0.55 | 1.15 | 0.3 | n/a | 1.56 |
| **F10** |  |  | 0.24 | 1.4 | 2.00 | 0.3 | n/a | 1.94 |
| **F11** |  |  | 0.26 | 1.5 | 0.45 | 0.3 | n/a | 2.51 |
| **F12** |  |  | 0.28 | 0.22 | 0.35 | 0.3 | n/a | 1.15 |
| **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%** |

**4.7 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 VII. 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 VIII. 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 IX. Hardware Cost

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

**Personnel Cost:**

Table X. 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 XI. 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 XII. 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.** |