# PACIFIC DEVELOPERS

ACN Tech System Specification (Design)

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## EXECUTIVE SUMMARY

Ms. Weltz, a business facilitator for Artisan's Co-op North hired Pacific Developers to design, develop, and maintain a system named ACN Tech. The system will facilitate business tasks by keeping track of inventory and sales. In addition, ACN Tech will also provide a report to pay artisan members. In a later version, an online shopping website will be implemented.

Pacific Developers has conducted a System Proposal in which they conducted an initial analysis, feasibility, and use case studies and found ACN Tech to be a feasible project. Pacific Developers is now ready to begin developing the ACN Tech system and have the first version finished before the Spring season.

This document includes an introduction which provides an overview of the project. A structural model which covers the system's classes. The architecture design section provides hardware and software requirements. A UI section which displays screen layouts. Lastly, an appendices which provides supporting detail.

# 1.0 INTRODUCTION

## 1.1 Problem Statement and Project Vision

Artisan's Co-op North manages artisan's sales and all other related business tasks. Recently the Co-op has grown to such an extent that a system is needed to facilitate and keep track of sales. The vision of ACN Tech is to modernize the way in which artisan's sales and inventory are tracked.

The major stakeholders are artisan members because they want an efficient and modern method to keep track of their inventory and make and track sales. Ms. Weltz and Business Facilitators need a system that allows them to facilitate business tasks and reporting to artisan members. Customers want a shopping experience that allows them browse through and buy handmade objects. Pacific Developers want the system to succeed because it could influence the acquisition of future projects.

## 1.2 System Services

The following are ACN Tech's functional requirements:

- Business Facilitators must be able to add new members or register them to the system. [Use Case 1-Register New Member]
- Business Facilitators must have the ability to create new barcodes and print them. [Use Case 2-Create New Barcode and 3-Print Barcode]
- Business Facilitators and Artisan Members must be able to add items to inventory. [Use Case 4-Add Item to Inventory]
- Artisan Members must be able to track their sales. [Use Case 5-Track Inventory]
- Business Facilitators must be able to view relevant information about artisans and their craft items. [Use Case 6-Manage Artisan's Item]
- ACN Tech must be able to facilitate sales during craft fairs. [Use Case 7-Purchase Item and 8-Display Item Information]
- Business Facilitators must be able to generate a report that assists or facilitates the payment process to artisans. [Use Case 9- Pay Artisan Member]

* The System Functional Requirements can be found in Section 4.2 and the Use Case Diagram can be found in Section 5.2 of the System Proposal.

## 1.3 Nonfunctional Requirements and Design Constraints

The following are possible thing to consider when developing ACN Tech:

- Artisan's Co-op North needs an efficient and inexpensive system
- The system must be compatible with several devices and operating systems such as tablets, smartphones, and computers
- ACN Tech must be easy to use
    - Thus, training or walkthrough tutorials should be available when the system is implemented
- The system should be completed by Spring or Summer at the latest
- ACN Tech needs to implement barcodes and a database to ensure a modern sales support system
- ACN Tech must be able to perform efficient sale transactions. Meaning the time after scanning an item and processing payment should be performed in under ten seconds
- The system must be secure and only allow access to authorized users
- Customer and member information must be private and secure
- ACN Tech will need to be maintained by Pacific Developers

## 1.4 System Evolution

In the first version of ACN Tech, Pacific Developers will provide a sales support system which includes inventory and sales tracking/support. In the second version Pacific Developers will provide an online shopping site for Artisan's Co-op North artisan's items.

## 1.5 Document Outline

The following are the major sections of the document:

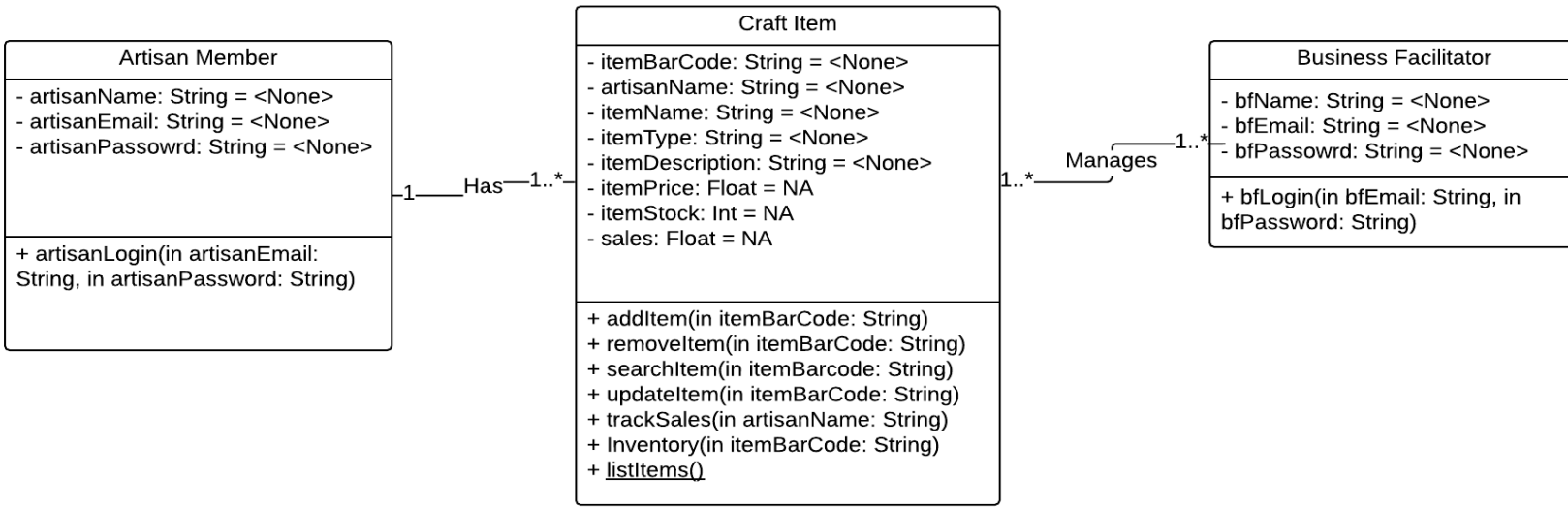
1. **Structural Model**: Presents the relationships between classes or objects in the system.
2. **Architecture Design**: Deployment diagram of the infrastructural model of system and the hardware and software necessary for the system
3. **User Interface**: Screen components of the system and how the user will navigate through them. Also includes visual depictions of the UI and visual depictions of printed system output.
4. **Appendices**: Glossary, bibliography, and other supporting documents and references.

## 2.0 STRUCTURAL MODEL

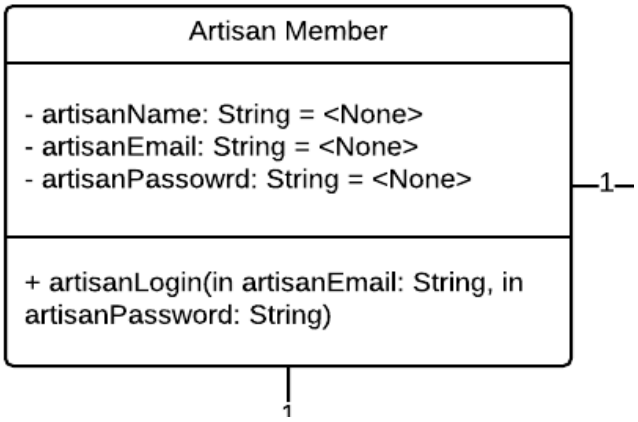
### 2.1 Introduction

This section contains a class diagram and metadata subsections. The class diagram provides an overview of the system, classes, and their relationships. The metadata provides greater detail about each class and its attributes and operations.

### 2.2 Class Diagram



## 2.3 Metadata




Description: Represents an Artisan's Co-op North Artisan Member
Visibility: Public
Is Abstract: No

Attributes:

| Name | Description | Data Type | Is Derived | Read Only | Visibility | Multiplicity | Default Value |
|---|---|---|---|---|---|---|---|
| artisanName | Artisan Last and First Name | String | No | No | Private | 1 | <none> |
| artisanEmail | Artisan Email Address | String | No | No | Private | 1 | <none> |
| artisanPassword | Artisan Password | String | No | No | Private | 1 | <none> |

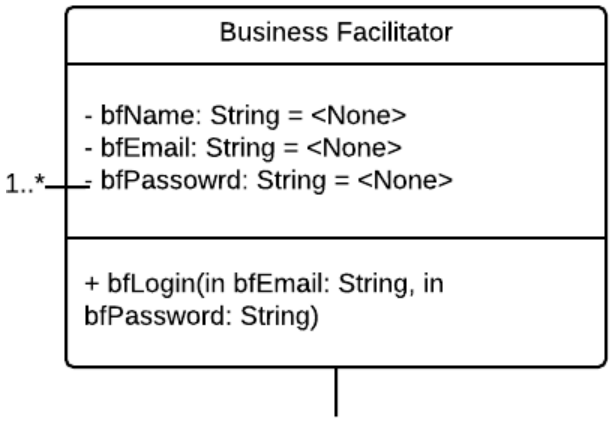
Operations:

| Name | Return Type | Parameters | Visibility | Scope | Is Query | Is Polymorphic |
|---|---|---|---|---|---|---|
| artisanLogin | <none> | artisanEmail<br>Direction: in<br>String<br>Default: None<br>artisanPassword<br>Direction: in<br>String<br>Default: None | Public | Instance | Yes | No |

**Processing Outline:**

**artisanLogin**

Artisan Member inputs email and password
If valid
    Allow user to login to the system
Else
    Inform user that login information is incorrect




Description: Represents an Artisan's Co-op North Business Facilitator
Visibility: Public
Is Abstract: No

Attributes:

| Name | Description | Data Type | Is Derived | Read Only | Visibility | Multiplicity | Default Value |
|---|---|---|---|---|---|---|---|
| bfName | Business Facilitator Last and First Name | String | No | No | Private | 1 | <none> |
| bfEmail | Business Facilitator Email Address | String | No | No | Private | 1 | <none> |
| bfPassword | Business Facilitator Password | String | No | No | Private | 1 | <none> |

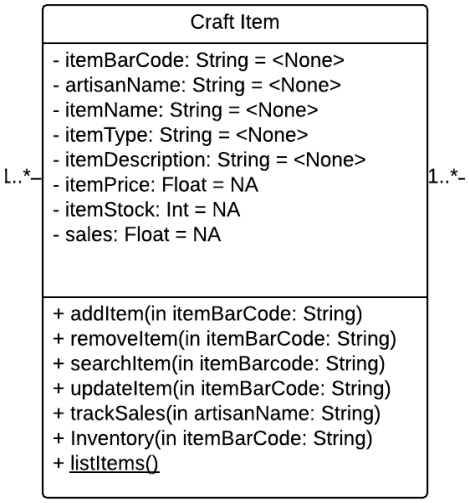
Operations:

| Name | Return Type | Parameters | Visibility | Scope | Is Query | Is Polymorphic |
|---|---|---|---|---|---|---|
| bfLogin | <none> | bfEmail<br>Direction: in<br>String<br>Default: None<br>bfPassword<br>Direction: in<br>String<br>Default: None | Public | Instance | Yes | No |

**Processing Outline:**

**bfLogin**

Business Facilitator inputs email and password
If valid
    Allow user to login to the system
Else
    Inform user that login information is incorrect




Description: Represents an Artisan's Co-op North Business Facilitator
Visibility: Public
Is Abstract: No

Attributes:

| Name | Description | Data Type | Is Derived | Read Only | Visibility | Multiplicity | Default Value |
|---|---|---|---|---|---|---|---|
| itemBarCode | An item's barcode | String | No | Yes | Private | 1 | <none> |
| artisanName | The creator of the item | String | No | No | Private | 1 | <none> |
| itemName | An item's name | String | No | No | Private | 1 | <none> |
| itemType | An item's type/category of craft | String | No | No | Private | 1 | <none> |
| itemDescription | An item's description | String | No | No | Private | 1 | <none> |
| itemPrice | An item's selling price | Float | No | No | Private | 1 | <none> |
| itemStock | An item's stock | Integer | No | No | Private | 1 | <none> |
| sales | An artisan's sales | Float | No | Yes | Private | 1 | <none> |

Operations:

| Name | Return Type | Parameters | Visibility | Scope | Is Query | Is Polymorphic |
|---|---|---|---|---|---|---|
| addItem | <none> | itemBarCode<br>Direction: in<br>String<br>Default: None | Public | Instance | No | No |
| removeItem | <none> | itemBarCode<br>Direction: in<br>String<br>Default: None | Public | Instance | No | No |
| searchItem | <none> | itemBarCode<br>Direction: in<br>String<br>Default: None | Public | Instance | Yes | No |
| updateItem | <none> | itemBarCode<br>Direction: in<br>String<br>Default: None | Public | Instance | No | No |
| tracksSales | <none> | artisanName<br>Direction: in<br>String<br>Default: None | Public | Instance | Yes | No |
| inventory | <none> | itemBarCode<br>Direction: in<br>String<br>Default: None | Public | Instance | Yes | No |
| listItems | <none> | <none> | Public | Instance | Yes | No |

**Processing Outlines:**

**addItem**

If itemBarCode is Valid

Display Form to add necessary information about an item and create a new item

Else

Inform user that itemBarCode is invalid

**removeItem**

If itemBarCode is Valid

    Delete item from Craft Items

    Inform the user of the name of the item to be deleted

**searchItem**

If itemBarCode is Valid and search matches a craft item

    Display information on that item

Else

    Display “No results found” message

**updateItem**

If itemBarCode is Valid

    Display form in which user can update item’s attributes except itemBarCode

**trackSales**

Displays an artisan’s sales

**inventory**

If itemBarCode is Valid

    Display current item stock/inventory

Else

    Inform user that itemBarCode is invalid

**listItems**

Display Crafts Items

# 3.0 ARCHITECTURE DESIGN

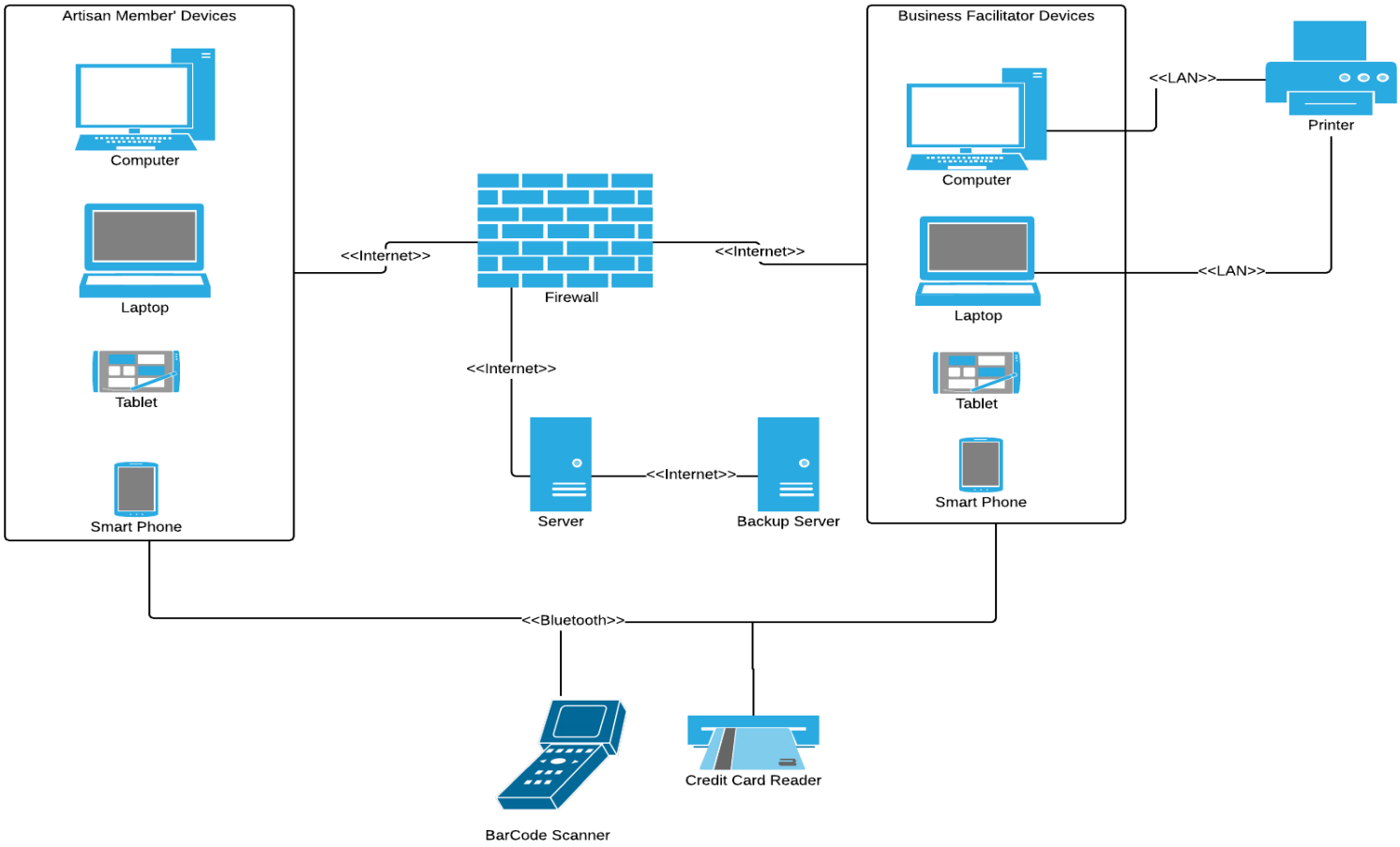
## 3.1 Introduction

This section includes two infrastructure models of ACN Tech. It also describes the hardware and software that are necessary as well as providing a security plan. The infrastructure models include an architecture overview, nodes, and artifacts diagram. It also displays what hardware will be used in the system, how it will be connected, and where specific parts of software will reside.

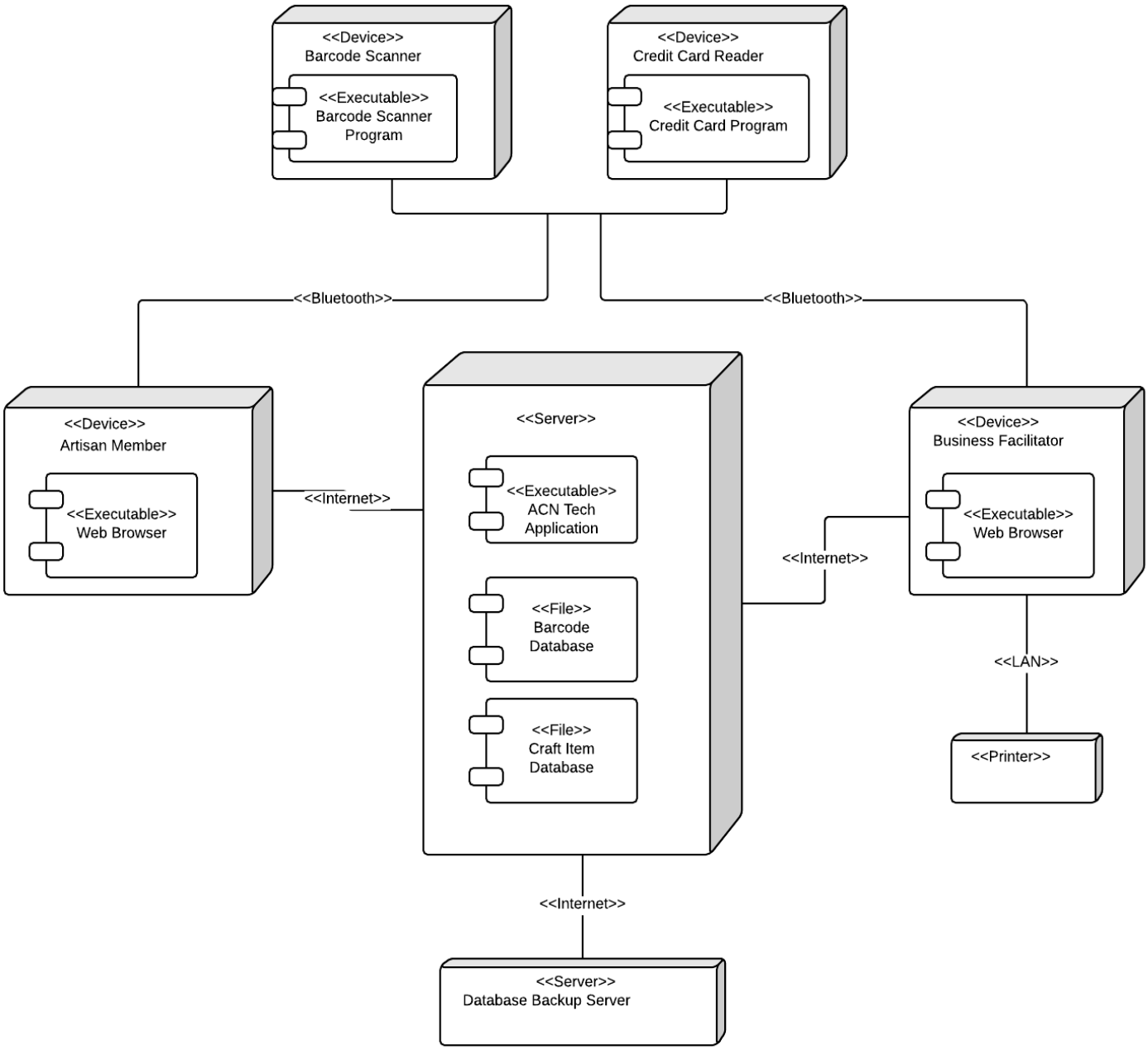
Pacific Developers recommends a thin-client model architecture since ACN Tech will be a web based application. Thus, client devices will only need to manage the presentation logic. The server will handle business application logic, data storage and data access. This architecture is ideal for ACN Tech because it is flexible, reliable, scalable.

## 3.2 Infrastructure Model

Deployment Diagram 1: Architecture Overview



Deployment Diagram 2: Nodes and Artifacts



## 3.3 Hardware and Software Requirements

Required Hardware Components:

- Internet connection: Business Facilitators and Artisan Members will need to have access to an internet connection
- Computers/Smartphones/Tablets: Artisan Members and Business Facilitator will need to have access to devices that can connect to the internet
- Bluetooth Devices: devices that are Bluetooth compatible are needed during craft fairs
- Barcode Scanner: People running the booths at craft fairs need to have a barcode scanner (will be provided by Pacific Developers)
- Credit Card Reader: a credit card reader that accepts credit card payments at craft fairs (will be provided by Pacific Developers)
- Database Server: a database server and a backup server will need to be purchased

Required Software Components:

- ACN Tech must support a variety of web browsers including Chrome, Safari, and Firefox
- ACN Tech must also support a variety of operating systems including Windows, Mac, and Android
- Virus and Malware: Computers or laptops used by ACN Tech will need to have up-to-date virus and malware protection

## 3.4 Security Plan

The major threats to ACN Tech include unauthorized access and breach of sensitive information. People and devices that use or operate ACN Tech must be trustworthy. In addition, password strength needs to be a priority.

Artisan Member information should be private to other artisan members. Business Facilitators should be the only people that can view information on all artisan members. All customer personal information will not be visible to business facilitators or artisan members. All data and member information will be stored on the server.

**Security Plan:**

| Components\Threats | Fire | Flood | Power Loss | Circuit Failure | Virus | External Intruder | Internal Intruder |
|---|---|---|---|---|---|---|---|
| Server | 1,2,5 | 1,2,5 | 1,5 | 3,5 | 5,8,9,10 | 4,6,10,11,12 | 6,10,11,12 |
| Business Facilitator Devices | - | - | - | - | 8,11 | 4,6,11,12 | 6,7,9,11,12 |
| Artisan Member Devices | - | - | - | - | 8,11 | 4,6,11,12 | 6,7,9,11,12 |
| Website | - | - | 3 | - | 8,9 | 8,9 | 8,9 |

**Controls:**

1. Disaster Recovery Plan
2. Fire alarms
3. Uninterrupted Power Supply (UPS) on servers
4. Purchase insurance for equipment
5. Backup data on a server located elsewhere (not in the same place as the server in the warehouse)
6. Data Encryption
7. Strong Password
8. Virus detection software
9. Anti-spyware software
10. Firewalls around database server
11. Artisan Member and Business Facilitator training
12. Access control list (only authorized Business Facilitators and Artisan Members can access the database server)

# 4.0 USER-INTERFACE

## 4.1 User Interface Requirements and Constraints

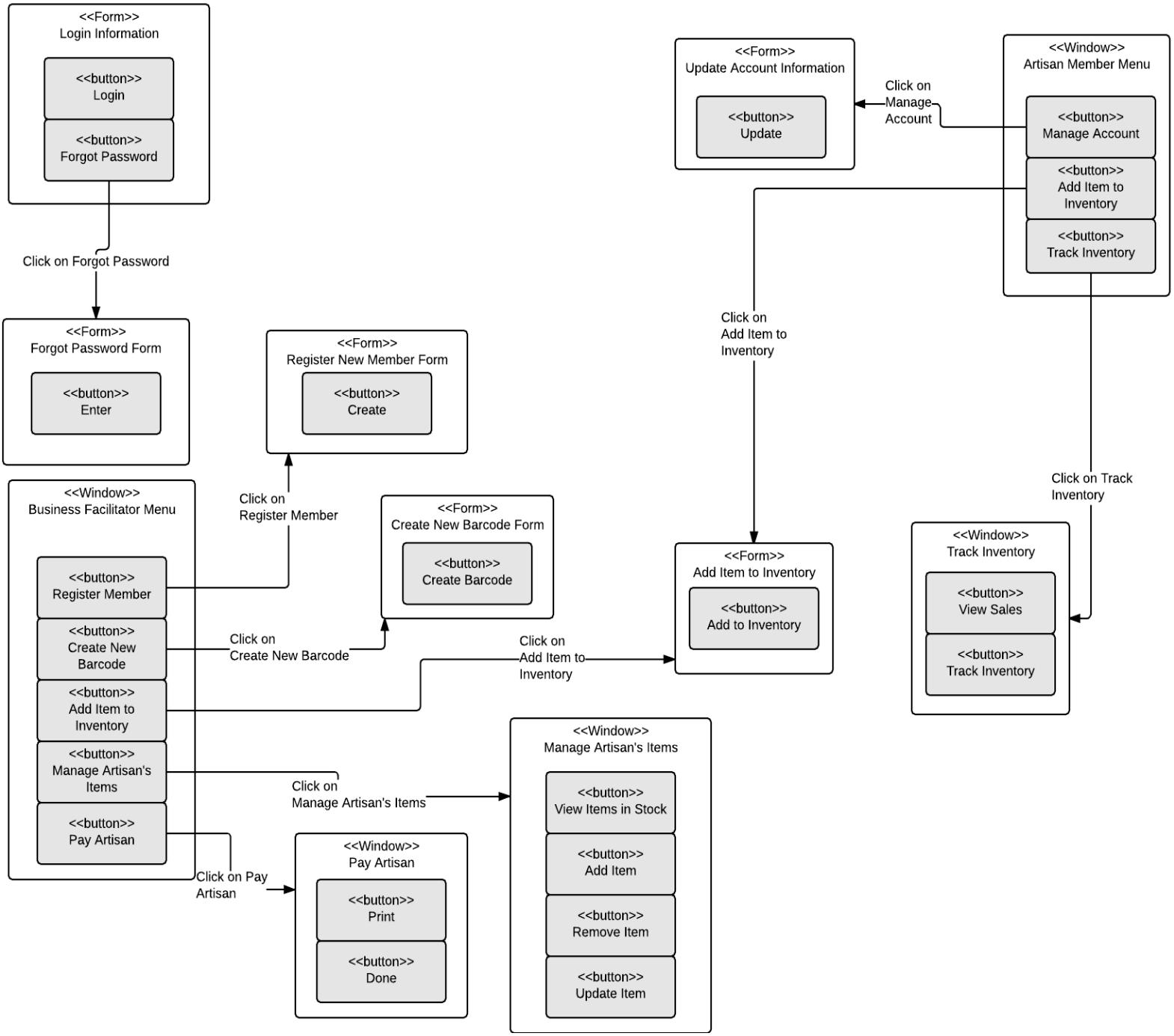
This section is composed of three subsections, a Window Navigation Diagram section which shows how to navigate between screens and forms. The Screen User Interface Design section demonstrates ACN Tech's visual components and screens. Lastly the Reports sections includes printed output of the system.

Furthermore, since ACN Tech is a web based application the desktop versions of the screen will be shown and mobile versions will be assumed to be scaled versions of the desktop version. The Reports section or Printed Output will display the possible monthly payment reports and barcodes.

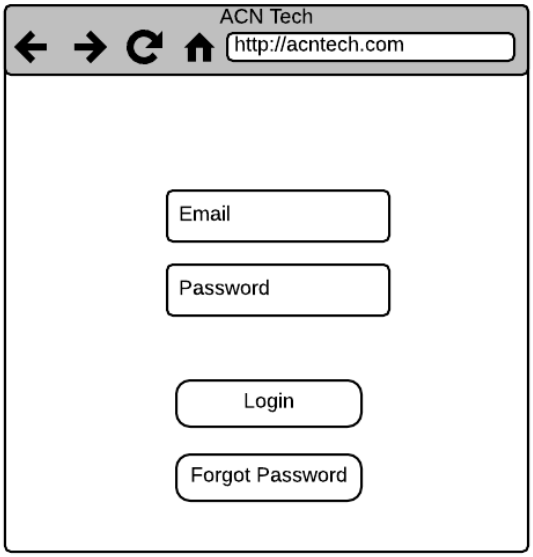
The following is a list of requirements and constraints that must be considered in the design and implementation of ACN Tech user interface:

- Users are likely to use their mobile or tablet devices to access the system. The user interface will likely be operated using touch screen.
- The user interface of the desktop will likely be operated using a mouse and keyboard
- Both the desktop and mobile interfaces must be similar
- Both mobile and desktop versions must be able to perform all functions
- A navigation title must let the user know where they are
- Users must be able to use the system as easy as possible without having unnecessary entery information or excess window forms

## 4.2 Window Navigation Diagram

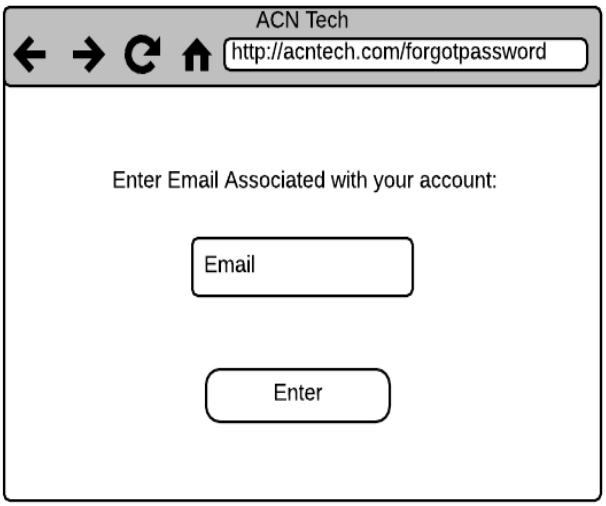


## 4.3 Forms: Screen / User-Interaction Design

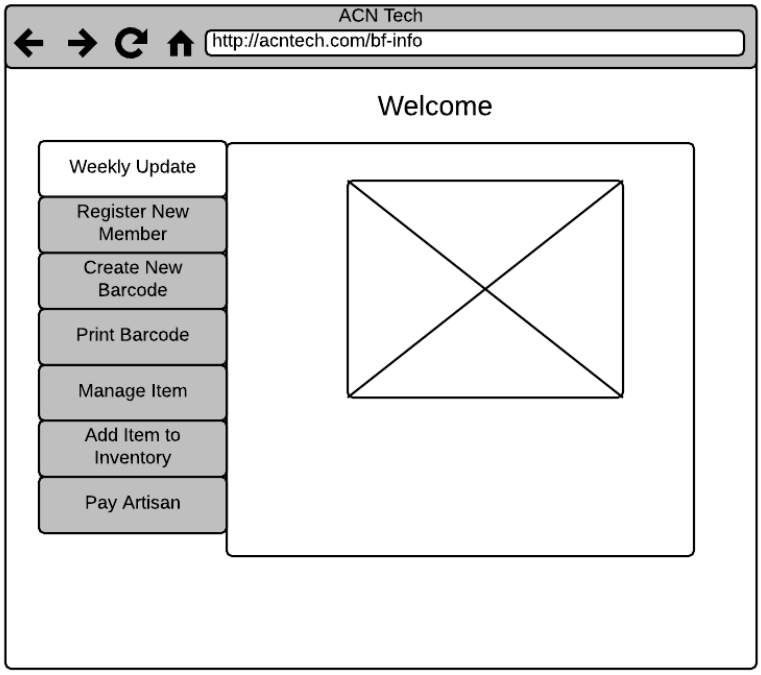



Login Screen for Artisan Members and

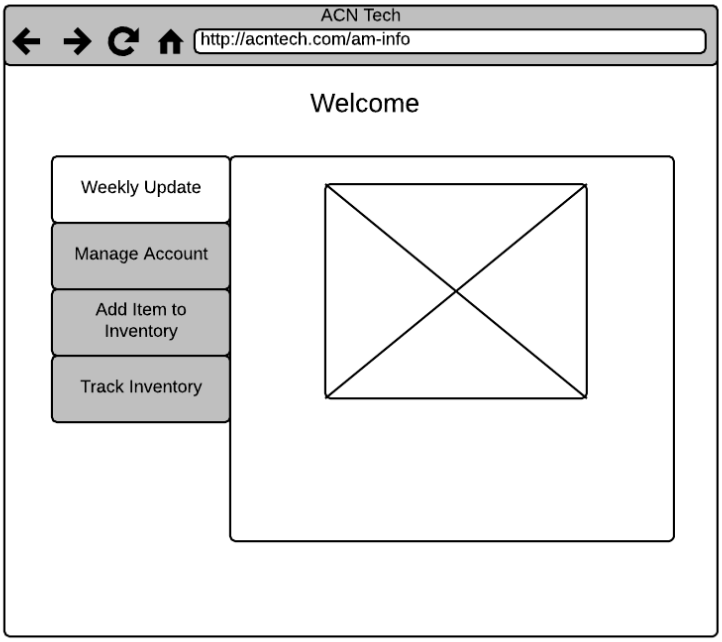
Business Facilitators.



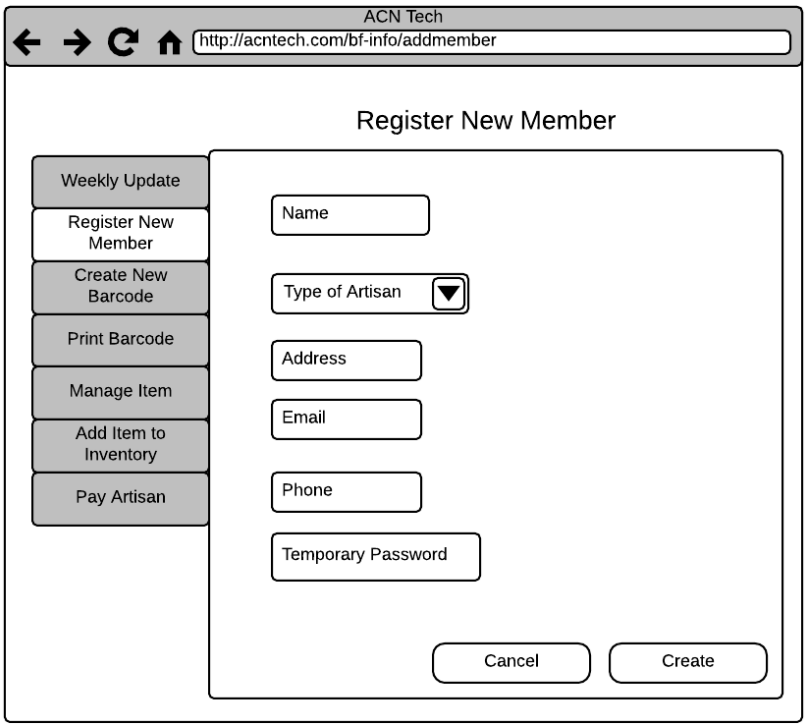

If the user clicks on forgot password button. This form is displayed.




If the account type is a business facilitator open this window.

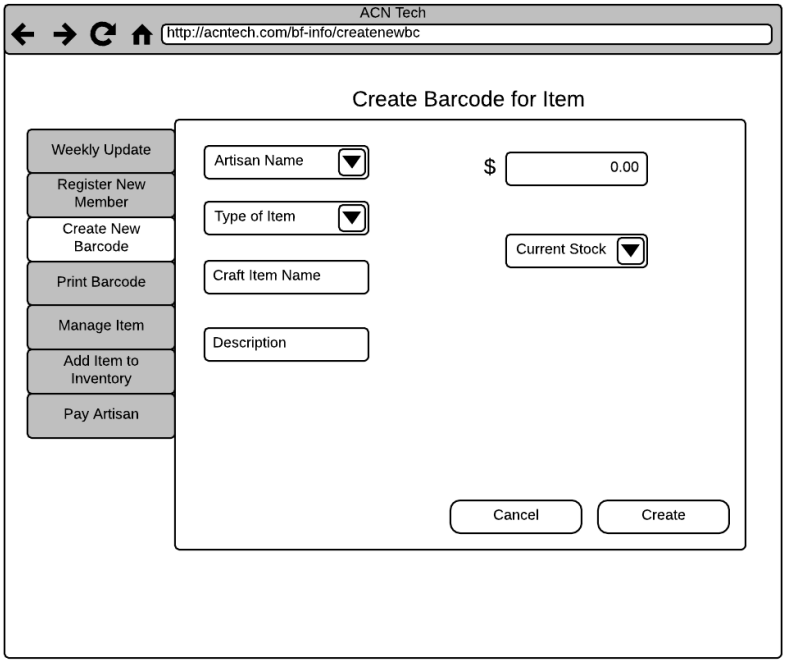



If the account type is an Artisan Member open this window.



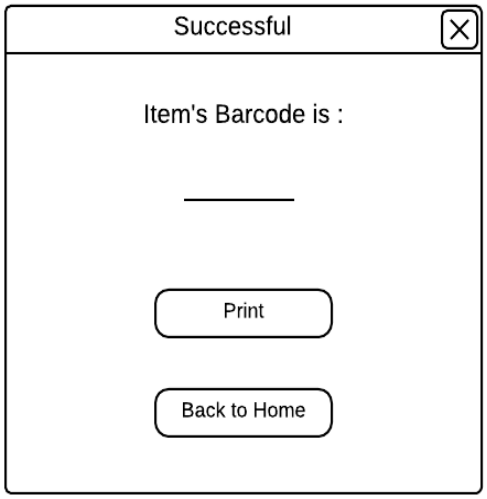

If the user selects the “Register a new Member” button display this form.

When an Artisan Member selects “Manage Account” a similar form should display but with the fields filled in and an Update button.

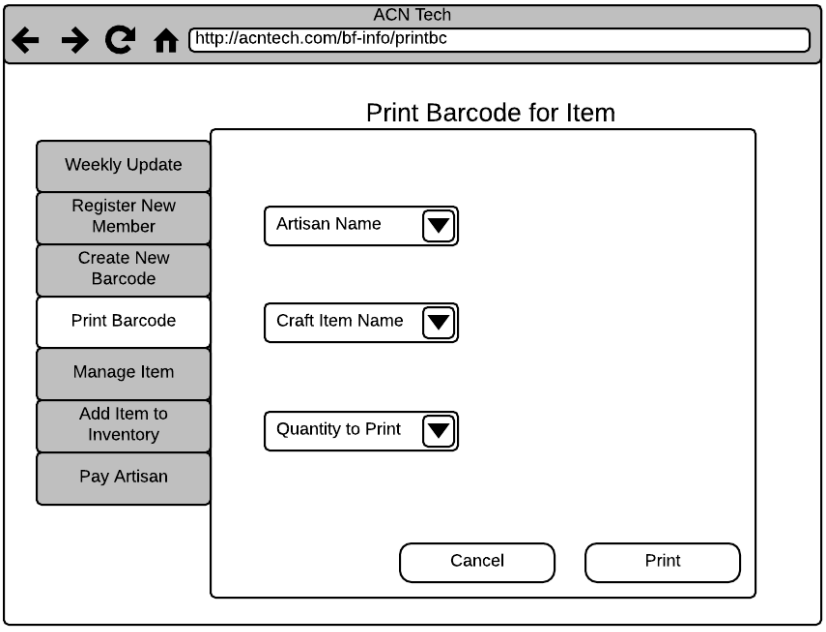



If the user selects “Create New Barcode” button display this form.

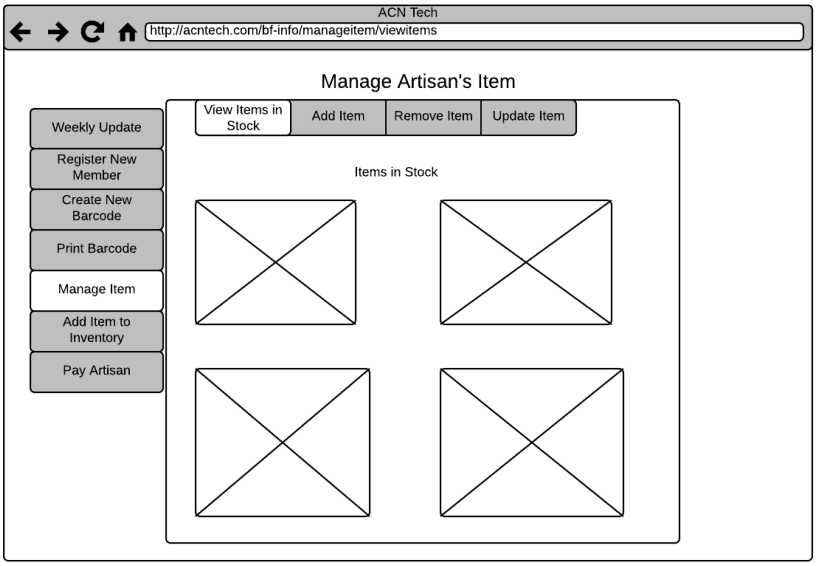
This form is similar to Update Item under Manage Item. Create button should be changed to Update.




This window displays the barcode and has option to print it or return to the home page.

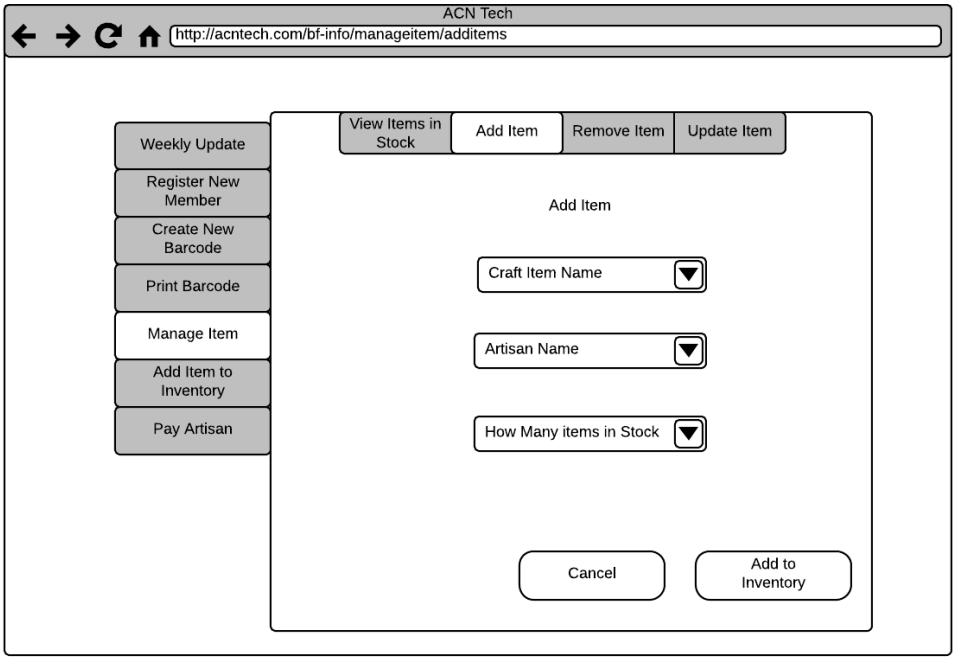



If the user selects “Print Barcode” button display this form.



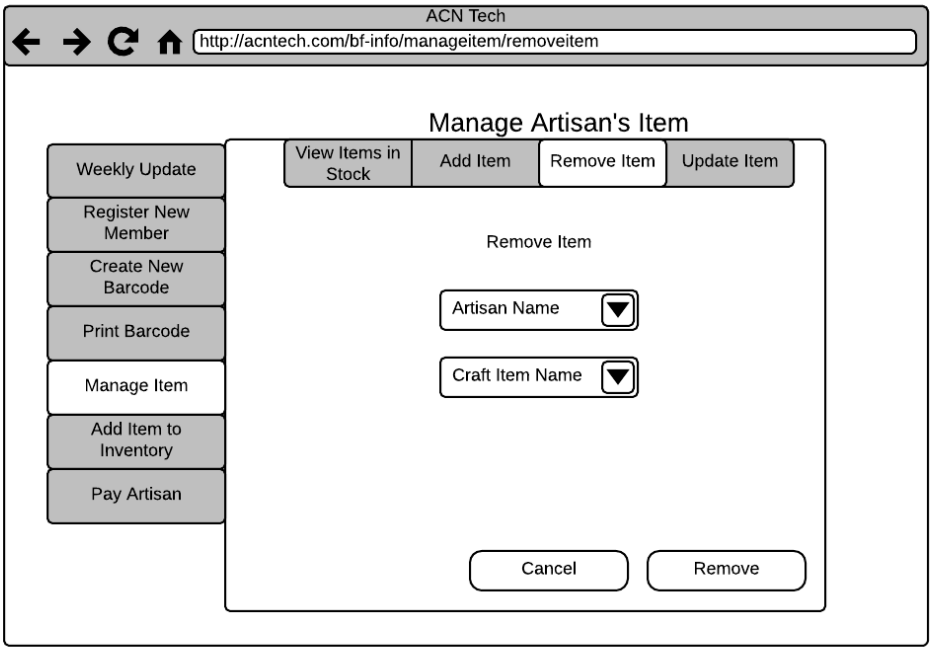

If the user selects the “Manage Item” button display this window.

There should be a short description under each picture like the name of the item. If the user clicks on the picture it should display the name of the item, stock, and other relevant information.

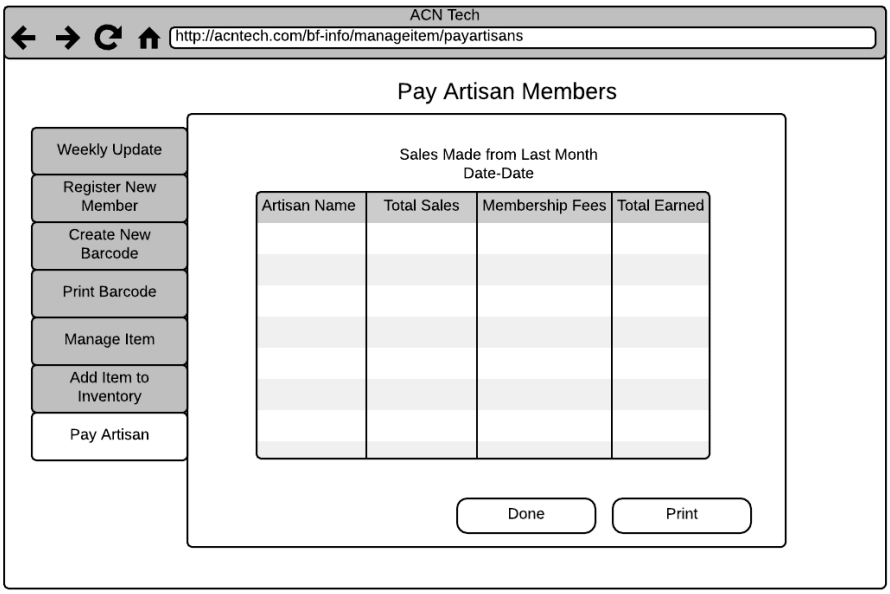



If the user selects “Add Item” button this form should be displayed.

Similar window should be displayed when Artisan Member selects “Add Item to Inventory”




If the user selects the “Remove Item” button this form should display.




If the Business Facilitator selects the “Pay Artisan” button this window should display.

A similar window should be displayed for an Artisan Member when they select “View Total Sales” under Track Inventory but only with their relevant information.

## 4.4 Reports: “Printed Output Design”

**Artisan Payment Report**
ACN Tech
<Name of Report>
<Time Period of Report>

<Sales Made from Date (Last Report Date) to Current Date>

| Artisan Name | Total Sales | Membership Fees | Total Earned |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Barcode Print**

ACN Tech
<Name of Report>
<Time Period of Report>

<Name of item>
<Name of Artisan>
<Price>

## 5.0 APPENDICES

Bibliography

"Barcoding Frequently Asked Questions." *Barcodes Inc.* Web. 25 Oct. 2017

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Weltz, Elaine (2017). Systems Design, various lectures [PowerPoint and Word Documents]. Retrieved from Professor Weltz through Canvas.

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