**COMSATS University Islamabad, Abbottabad Campus**

**Department of Computer Science**

**Project Proposal**

**NextGen POS System**

**CSC392 Object Oriented Software Engineering**

Submitted on: <Date&Time>

Group Members:

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Table of Contents

[CHAPTER 1 PROJECT PROPOSAL 3](#_Toc101427096)

[Introduction 3](#_Toc101427097)

[Vision and Business Case 3](#_Toc101427098)

[Use-Case Model 3](#_Toc101427099)

[Supplementary Specification 3](#_Toc101427100)

[Glossary 3](#_Toc101427101)

[Risk List & Risk Management Plan 3](#_Toc101427102)

[CHAPTER 2 USE CASES 4](#_Toc101427103)

[Use Case Diagram 4](#_Toc101427104)

[Brief Level Use Cases 4](#_Toc101427105)

[Student Name 1 (Registration Number 1) 4](#_Toc101427106)

[Student Name 1 (Registration Number 1) 5](#_Toc101427107)

# CHAPTER 1 PROJECT PROPOSAL

## Introduction

[Text Book: 3.3. Case One: The NextGen POS System]

## Vision and Business Case

***Describes the high-level goals and constraints, the business case, and provides an executive summary.***

[Text Book: 7.6. NextGen Example: (Partial) Vision]

## Use-Case Model

Describes the functional requirements. During inception, the names of most use cases will be identified, and perhaps 10% of the use cases will be analyzed in detail.

## Supplementary Specification

***Describes other requirements, mostly non-functional. During inception, it is useful to have some idea of the key non-functional requirements that have will have a major impact on the architecture.***

[Text Book: 7.4. NextGen Example: (Partial) Supplementary Specification]

## Glossary

***Key domain terminology, and data dictionary.***

7.8. NextGen Example: A (Partial) Glossary

## Risk List & Risk Management Plan

***Describes the risks (business, technical, resource, schedule) and ideas for their mitigation or response.***

* + For example, leadership really wants a demo at the POSWorld trade show in Hamburg, in 18 months. But the effort for a demo cannot yet be even roughly estimated until deeper investigation.
  + For example, in the NextGen POS, for what remote services (e.g., tax calculator) will fail-over to local services be allowed? Why? Do they provide exactly the same services locally as remotely, or are there differences?

# CHAPTER 2 USE CASES

## Use Case Diagram

<Paste your semester project diagram imported from CASE Tool i.e. starUML here>

## Brief Level Use Cases

### Student Name 1 (Registration Number 1)

#### Use Case: Process Sale

A customer arrives at a checkout with items to purchase. The cashier uses the POS system to record each purchased item. The system presents a running total and line-item details. The customer enters payment information, which the system validates and records. The system updates inventory. The customer receives a receipt from the system and then leaves with the items.

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## Brief level use case:

#### Use case: view attendance

View attendance use case will use take attendance of students and faculty the attendance of faculty will be through biometric, and the record will be saved in database and the attendance of student will be taken by teachers and the record will be submitted on system. The admin and teacher can modify and view the attendance of student. The guardian and student can only view attendance.

Fully dressed use case:

**scope**: view attendance

**primary Actors**: faculty, admin.

**Stake holder and interest:**

Teacher: Teacher wants to take attendance easily without any error and don’t want to carry extra register to mark students’ attendance.

Faculty: it is easy for faculty to mark attendance using biometric and the attendance is updated directly

In the system and there is less chance of errors to forgot attendance.

Student: students want to get rid of traditional list to check their attendance and the system is very useful to for student to view their updated attendance.

Guardian: The system also alerts the guardian if the student is absent.

Admin: managing the teachers and student attendance and classes this system is very difficult for admin.

The system generates class wise attendance lists and inform that which faculty member is absent.

**Preconditions:** student, teacher and admin must be identified and authenticated.

**Success guarantee** (or Postconditions): The process of Taking attendance become easy. View real time attendance. Accurate attendance Report for admin.

**Main success scenario or Basic flow:**

* Faculty marks their attendance through biometric.
* Teacher marks attendance of students using the system and records is saved in the database.
* The system generates attendance report for admin.
* System alert guardian if the student is absent.
* Students and guardians can view the real time attendance.

**Extension or alternative flows:**

At any time, the internet can be gone:

* During the marking or updating attendance any time the internet connection may be gone.
* The system will be interrupted, and the teacher will no be able to use the system.
* After the fixing the internet, the user will login and continue back to his work.

At any time, system fails:

* The system can fail any time. The system it will save the work.
* User will restart the system and request for recovery the system will start from the prior state.

If system does not recover:

* The user will suspend the operation and the system will show an error message.
* The user starts a new operation and continue to his work.

**Special requirements:**

* The user should have the computer to use the system.
* The internet must be connected.
* The user should be authorized and authenticated.

**Technology and Data Variations List**:

The must have computer connected to internet.

Student Name 3 (Registration Number 3)

Fully Dressed Use Cases

### Student Name 1 (Registration Number 1)

| Use Case UC1: Process Sale |
| --- |
| **Scope**: NextGen POS application  **Level**: user goal  **Primary** **Actor**: Cashier  **Stakeholders and Interests**:  - Cashier: Wants accurate, fast entry, and no payment errors, as cash drawer shortages are deducted from his/her salary.  - Salesperson: Wants sales commissions updated.  - Customer: Wants purchase and fast service with minimal effort. Wants easily visible display of entered items and prices. Wants proof of purchase to support returns.  - Company: Wants to accurately record transactions and satisfy customer interests. Wants to ensure that Payment Authorization Service payment receivables are recorded. Wants some fault tolerance to allow sales capture even if server components (e.g., remote credit validation) are unavailable. Wants automatic and fast update of accounting and inventory.  - Manager: Wants to be able to quickly perform override operations, and easily debug Cashier problems.  - Government Tax Agencies: Want to collect tax from every sale. May be multiple agencies, such as national, state, and county.  - Payment Authorization Service: Wants to receive digital authorization requests in the correct format and protocol. Wants to accurately account for their payables to the store.  **Preconditions**: Cashier is identified and authenticated. |

**Success Guarantee** (or Postconditions): Sale is saved. Tax is correctly calculated. Accounting and Inventory are updated. Commissions recorded. Receipt is generated. Payment authorization approvals are recorded.

**Main Success Scenario (or Basic Flow):**

1. Customer arrives at POS checkout with goods and/or services to purchase.
2. Cashier starts a new sale.
3. Cashier enters item identifier.
4. System records sale line item and presents item description, price, and running total. Price calculated from a set of price rules.

Cashier repeats steps 3-4 until indicates done.

1. System presents total with taxes calculated.
2. Cashier tells Customer the total, and asks for payment.
3. Customer pays and System handles payment.
4. System logs completed sale and sends sale and payment information to the external Accounting system (for accounting and commissions) and Inventory system (to update inventory).
5. System presents receipt.
6. Customer leaves with receipt and goods (if any).

**Extensions (or Alternative Flows):**

\*a. At any time, Manager requests an override operation:

1. System enters Manager-authorized mode.
2. Manager or Cashier performs one Manager-mode operation. e.g., cash balance change, resume a suspended sale on another register, void a sale, etc.
3. System reverts to Cashier-authorized mode.

\*b. At any time, System fails:

To support recovery and correct accounting, ensure all transaction sensitive state and events can be recovered from any step of the scenario.

1. Cashier restarts System, logs in, and requests recovery of prior state.
2. System reconstructs prior state.

2a. System detects anomalies preventing recovery:

* 1. System signals error to the Cashier, records the error, and enters a clean state.
  2. Cashier starts a new sale.

1a. Customer or Manager indicate to resume a suspended sale.

1. Cashier performs resume operation, and enters the ID to retrieve the sale.
2. System displays the state of the resumed sale, with subtotal.

2a. Sale not found.

* 1. System signals error to the Cashier.
  2. Cashier probably starts new sale and re-enters all items.

1. Cashier continues with sale (probably entering more items or handling payment).

**Special Requirements:**

- Touch screen UI on a large flat panel monitor. Text must be visible from 1 meter.

- Credit authorization response within 30 seconds 90% of the time.

- Somehow, we want robust recovery when access to remote services such the inventory system is failing.

- Language internationalization on the text displayed.

- Pluggable business rules to be insertable at steps 3 and 7.

- …

**Technology and Data Variations List**:

\*a. Manager override entered by swiping an override card through a card reader, or entering an authorization code via the keyboard.

3a. Item identifier entered by bar code laser scanner (if bar code is present) or keyboard.

3b. Item identifier may be any UPC, EAN, JAN, or SKU coding scheme.

7a. Credit account information entered by card reader or keyboard.

7b. Credit payment signature captured on paper receipt. But within two years, we predict many customers will want digital signature capture.

Frequency of Occurrence: Could be nearly continuous.

**Open Issues:**

- What are the tax law variations?

- Explore the remote service recovery issue.

- What customization is needed for different businesses?

- Must a cashier take their cash drawer when they log out?

- Can the customer directly use the card reader, or does the cashier have to do it?

**Screen Shots:**

<Paste the images from netbeans here for the relevant screen>