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Automated Mini-Golf Course Design

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# Overview

This document outlines design requirements and use case scenarios for automating a Mini-Golf Course.

This design solution will automate the task of recording the number of strokes for each hole. It will incorporate the use of a keypad at each hole. The keypad utilizes a swipe-card that identifies the player and automatically records and keeps track of their scores.

The various courses around Tampa Bay all use the same central computer (already installed), connected to the card-swipe stations at each course using a network.  All the hardware has been installed already and the network is up and running.

## Requirements

Develop an automated mini-golf course design with the following capabilities:

* Need #1: Work with existing central network:
  + Card-swipe stations with the keypad
  + Central computer
  + Hardware and network
  + Card made with disposable cardboard and fitted with barcode
* Need #2: UI screen at each Card-swipe station with keypad for player score input
* Need #3: UI screen should display:
  + Players name
  + Current score
  + Number of strokes over or under par
* Need #4: Last hole UI screen should have two extra capabilities:
  + Optional printout of their score card
  + A discount coupon printed on the back for next mini-golf game

# Use-Case scenerios

## Use Case - Golfer

### Use Triggers

* Need to record current score
* Need to add score to scorecard
* Need to show current hole score
* Need to check if strokes are over or under par

### Pre-Conditions

* Must have paid for mini-golf round
* Must have swipe card
* Card must be activated by employee
* Card must have the golfer’s name associated with it
  + Name can be printed on the card
  + Name can be associated with it in computer system

### Post-Conditions

* Game data must be persistent after each score entered

### Normal Flow for Golfer

1. Player purchases a game of mini-golf
   1. Employee activates swipe card
   2. Employee assigns player’s name to swipe card
   3. Employee initiates the start of game to the server
2. Player starts the game of mini-golf at the Hole #1
   1. Player sinks the ball in the hole.
   2. Player swipes their assigned card at the card-swipe station
   3. Display screen identifies player by the name activated on the card and displays it
   4. Player enters number of strokes
   5. Card-swipe station displays player’s name, current score, number of strokes under/over par
   6. These events are repeated for each hole until all are played
3. After entering number of strokes for last hole, card-swipe station gives the following options:
   1. Display screen shows player’s name, current score, and final score
   2. Display screen shows two options:
      1. Yes, print scorecard
         1. Prints coupon on back of scorecard
      2. No, do not print scorecard

## Use Case – Mini-Golf Employee

### Employee Use Triggers

* Employee enters player name into game management system
* Employee codes card with player information and issues it to player
* At end of game, employee receives card, swipes card in system, and prints player score

### Post-Conditions

* Changes must be persistent

### Normal Flow

* Player provides name
* Player is issued disposable swipe card at point of sale
* Game starts
* Player swipes card at holes
* Player plays at hole
* Game records score
* At completion, player returns badge
* Player receives printout with score

# Technology Requirements

## Functional Requirements

|  |  |  |  |
| --- | --- | --- | --- |
| Req’d ID | Description | Priority | Complexity |
| FR.01 | The system shall have 99% uptime during business hours | High | Low |
| FR.02 | Maximum Sustained Load shall be up to 1000 simultaneous players across seven mini golf locations. Scalable up to 2000 simultaneous players. | Medium | Medium |
| FR.04 | User Response Time shall be <= 4 seconds | High | Medium |
| FR.05 | Failure modes shall be be <= 15 minutes for rebooting system | High | Medium |

## Operational Requirements (non-functional requirements)

|  |  |  |  |
| --- | --- | --- | --- |
| Req’d ID | Description | Priority | Complexity |
| OR.01 | Card reader monitors and records player card swipe | High | Med |
| OR.02 | Point station records player score in central computer log | High | Med |
| OR.03 | Terminal prints out score card | Med | Low |

# System description

* Primary server located on site
* Infrastructure in place; each hole is fitted with card-swiping station
* Network is operational

# UML design for classes

