

Wayne's Geocaching System Solutions

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Wayne's Geocaching System

Assignment D0-1: System Vision Document

Description

Wayne Johansen has become an active fan of geocaching and would like to keep track of all of his geocaching activities. Rather than use one of the free or commercial web sites, he would like to have his own geocaching system on his own computer. The system will need to have to support several different geocaching types of activities, including listing interesting geocaches and trips that Wayne would like to do, also geocaches that he has found and trips he has taken. In addition, since Wayne also would like to create his own geocaches, he would like to be able to create and describe his own geocaches and track those that he has posted for public use.

This system is essentially a information tracking system. It will need its own database to keep track of all of the information about his activities and his geocaches. For this first version, since he did not know a lot about computers, he decided it would be best just to have a system built to run on his laptop.

System Capabilities

The new system should do the following:

- Keep track of interesting geocach locations that have not been located yet
- Keep track of geocaches that have been located
- Record detailed and ancillary information about located geocaches
- Keep track of new geocaches that are being created by Wayne
- Keep track of posted geocaches that Wayne has posted to geocaching sites
- Provide summary information (reports) about Wayne geocache activities

Application Benefits

This system should provide the following benefits to Wayne:

- Enable Wayne to easily track all of his geocaching trips and find
- Enable Wayne to easily create and post new geocaches
- Allow Wayne to share his geocaching interests with other friends
- Allow Wayne to update his geocaching information while traveling with his laptop

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Assignment D1-1: Definition of Iterations

Solutions will vary depending on what the student chooses. The important issue is that the student has thought through and decided on a solution.

One possible solution

Divide the system by functionality. Iteration one will be to capture information about geocaches that Wayne has completed. Iteration two will be to allow Wayne to create and post his own geocaching information.

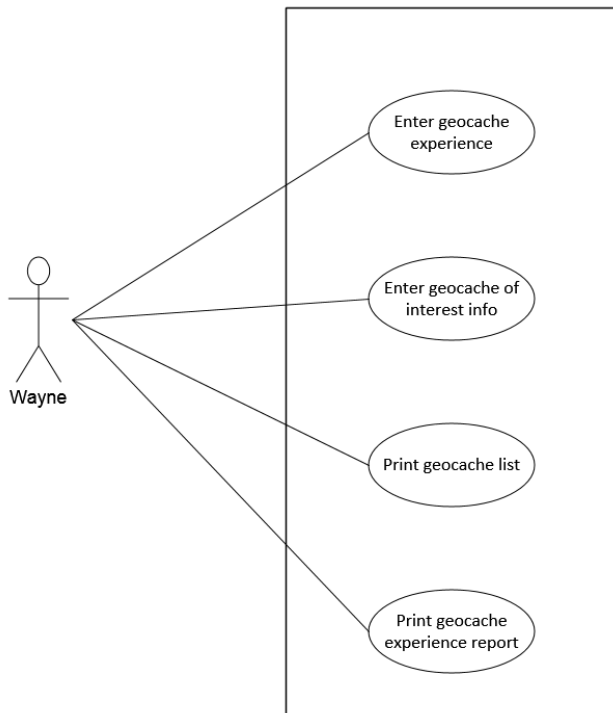
Assignment D1-2: Work Breakdown Structure

- I. Discover and analyze Wayne's needs to record completed geocaches
 - 1. Wayne and his brother meet together to view geocaching websites and discuss Wayne's desires.
 - 2. Identify the information that Wayne wants to keep.
 - 3. Identify the use cases to capture and store that information.
 - 4. Develop workflows for the identified use cases.
- II. Design the components of the solution
 - 1. Design the database tables.
 - 2. Design the input and output screens.
 - 3. Design the configuration for the laptop software application.
 - 4. Design the program details
- III. Program the system
 - 1. Create the database.
 - 2. Write the computer program (includes both user interface and database updating).
- IV. Test it and use it
 - 1. Test it with good data and bad data (check the validation).
 - 2. Wayne test it with some of his real data.
 - 3. Turn it over to Wayne to use.

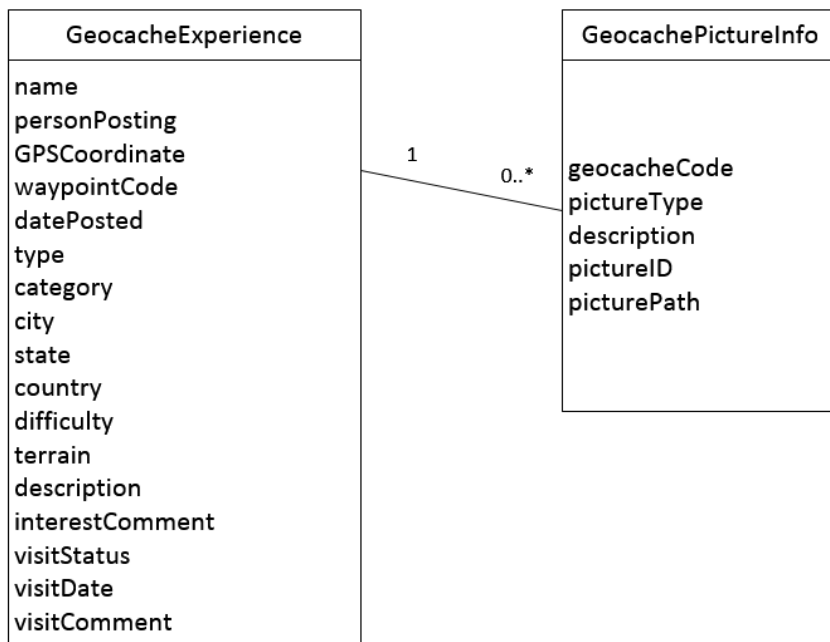
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Solutions will vary. The important thing is that the student has some solution elements. The details of the use case diagram and the class diagram will vary tremendously, e.g. which attributes to identify.

Assignment D2-1 and D2-3: Use case diagram



Assignments D2-2 and D2-4: Class diagram



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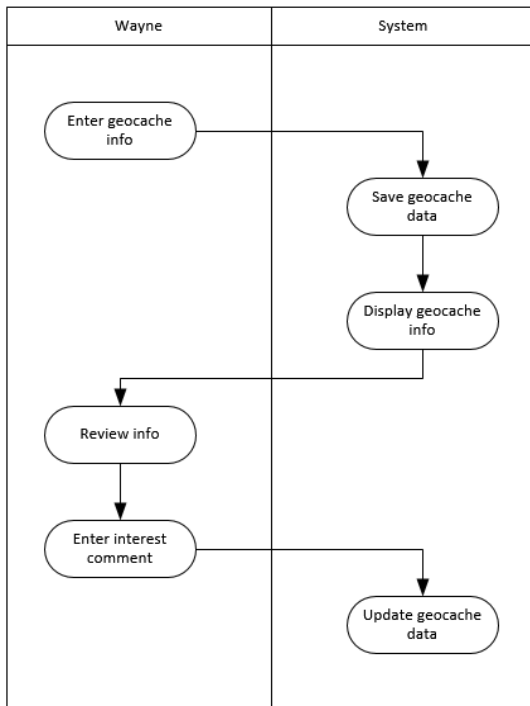
Assignment D3-1: Steps for use case

Use Case: Enter geocache of interest info

Steps:

1. Enter basic geocache information from source information
2. Review information
3. Enter reason for interest in comments

Assignment D3-2: Workflow diagram



Assignment D3-3: Screen Layout

Enter New Geocache	
Name: <input type="text"/>	Waypoint Code: <input type="text"/>
Posting Person: <input type="text"/>	GPS Coordinates: <input type="text"/>
Date Posted: <input type="text"/>	City: <input type="text"/>
Category: <input type="text"/>	State: <input type="text"/>
Type: <input type="text"/>	Country: <input type="text"/>
Difficulty: <input type="text"/>	
Terrain: <input type="text"/>	
Comment: <input type="text"/>	

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Assignment D4-1: Preliminary database design

Table: GeocachingExperience	Table: GeocachePhoto
cacheID: integer, auto-increment, {key} cacheName: string {index} personName: string gpsCoord: string waypointCode: string {index} datePosted: date type: string category: string city: string state: string country: string difficulty: string terrain: string description: string interestComment: string visitStatus: string visitDate: date visitComment: string	ImageID: integer, GUID, {key} cacheID: integer, {foreign key} pictureType: string description: string directoryPath: string

Assignment D4-2: Desktop or browser solution

Answers will vary.

Desktop reasons:

Pros:

- Single machine with easy deployment
- Single database location
- Easy to build
- Secure
- Easier to build automated interface to download data to computer

Cons:

- Cannot access from multiple locations
- Not easy to share data with others (future use/growth)

Browser reasons:

Pros:

- Can access from multiple locations
- Can share information with others

Cons:

- Always needs internet access
- Browser may limit information display
- Requires a server somewhere (uptime?)
- Security is more complex – may require login functionality
- Formatting reports is usually more complex via browser

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Assignment D5-1: Programming Approach

Answers will vary: Issues include compiled versus interpreted languages, experience, available tools and IDEs, etc.

Assignment D6-1: Programmer testing and user testing

Answers will vary:

Programmer testing:

- Tends to test only good data
- Tends to test with artificial data
- Tends to do limited testing
- Cannot always verify answers are correct
- Tends to test for crashes versus correctness
- Cannot always test various combinations

User testing:

- Tends to test/use in complex ways
- Tends to use more complex data
- Tends to make mistakes
- Can test based on work procedures

Assignment D6-2: Deployment Issues

Answers will vary, especially whether a desktop or browser based solution was chosen.

Desktop:

- Operating System issues
- Set up database
- Startup script to start database engine
- How to backup/restore data
- Paths and libraries for image storage
- Compiled/linked (e.g. binary) version versus interpreted language

Browser:

- Same issues as desktop, except must be decided for server.
- Where/how to deploy server (home based or hosted)
- Domain name and address, possibly require virtual server
- Login functions
- Security issues for hacking and posting inappropriate data

Assignment D6-3: Multiple user site - Deployment Issues

- Same issues as browser based listed above
- Where and how to host the site
- How to build for multiple browsers
- Growth and scalability