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Recommended Citation: Schwieger, D. (2022). Teaching Case: Design and Development of a Special Population Resource Connection Database. *Journal of Information Systems Education*, 33(2), 141-148.

Article Link: <https://jise.org/Volume33/n2/JISE2022v33n2pp141-148.html>

Initial Submission: 12 April 2021
Accepted: 21 June 2021
Published: 15 June 2022

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ISSN: 2574-3872 (Online) 1055-3096 (Print)

Teaching Case

Design and Development of a Special Population Resource Connection Database

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ABSTRACT

Connecting people with resources is a common activity. However, special situations have unique data needs. Without the appropriate leadership and tools to manage the data, the connections may never take place. This case examines the data needs associated with providing resources and social connections for families having a member with a special need. The case provides a realistic scenario that can be used in a systems analysis and design, database development, or graduate-level management information systems course. The case focuses on developing a database to provide a support system for connecting caregivers of loved ones having special needs with people in similar circumstances, volunteers, and social and employment opportunities. Two assignment options are provided, allowing instructors to select an assignment based on course material coverage. Suggested assignments include the development of process modeling diagrams such as a data flow or swimlane diagrams and database design and development artifacts.

Keywords: Teaching case, Database design, Process modeling, Swimlane diagram

1. CASE SUMMARY

Due to a job transfer, Lisa and Mark Williams recently moved to Whispering Hills with their two daughters. Frustrated with a lack of information about area special needs resources, Lisa set out to develop a centralized repository for area resources and opportunities for individuals with special needs and their families. Through conversations with a friend from home who oversaw such a service, information is gathered to provide the requirements to create the database that Lisa has in mind.

2. CASE TEXT: FINDING A SOLUTION

Lisa Williams stared vacantly at the picture of her daughter's friends on the dining room wall. Yes, she missed their old house and friends in Pine Bluff; but she especially missed the opportunities that were available for young adults with special needs. She, her husband, and their two daughters, had recently moved to Whispering Hills due to Mark's job transfer. April, her 12-year-old, was starting to get acclimated to her new school and friends. However, Susie, her 19-year-old with Down Syndrome, still seemed lost without her normal routine. Although Whispering Hills was about the same size as Pine Bluff, it seemed like the community was lagging in providing social opportunities for children and young adults with special needs.

After dinner was over and the kids had gone outside, Mark made it a point to find out what was wrong. "Okay, Lisa. What gives? Why were you so quiet during dinner?"

That was all she needed. Lisa's concerns for Susie's missing social network came pouring out. They had had this conversation many times before, but it helped to talk about it. "I've been thinking about this," Mark said. "I know how upset this makes you. As big as this town is, there surely must be opportunities available. We just don't know how to find them. There are probably several services and events scattered across agencies and organizations that are not very well coordinated and centralized. Why don't you call your friend who centralized the efforts in Pine Bluff? I think the families here need a champion like Jan to get the ball rolling. You're just the right person to fill the role. Besides, it would be a great way to meet other families in the area."

"I suppose it wouldn't hurt to give Jan a call," Lisa brightened. "Besides, it would be nice to catch up with her. I'll have to summarize a list of what I have found so far before I call."

2.1 Catching Up with Jan

Lisa texted Jan about setting aside some time for an extended conversation to catch up and discuss the coordination efforts Jan had gone through at Pine Bluff. Lisa also sent Jan a list of the opportunities she had found so far, as well as some questions Lisa wanted to ask (Appendix A).

“Lisa!” Jan exclaimed. “It is so nice to get to talk to you again. I’ve been wondering how your family has been, especially Susie. I know change can be awfully hard. Tell me about life at Whispering Hills while I email my responses to your questions.”

Lisa opened the attachment containing Jan’s responses as their conversation shifted focus to Jan’s work at Pine Bluff. “Now Lisa,” Jan opened, “you know that all I did to get things started at Pine Bluff was to ask a lot of questions and create a simple collection point for answers. I really don’t provide any services except connecting people with opportunities that fit their needs.”

“That’s what I want to do too,” Lisa agreed. “There are websites and offices around town that can help people connect with government resources. What I am interested in providing is a means to connect people with special needs and their caregivers with appropriate social opportunities to provide support and engagement in the community.”

“If you have not already done so,” Jan noted, “a good way to get started is by talking to area resource centers, churches, and volunteer organizations to see what they are doing and to get some contacts’ names. My oldest son, Jason, is in a technology-oriented class at college. I’ll have him look at my database to see if we can give you a copy to help you organize your resources. My computer is pretty old, and the database is as well. I’m not sure if my database will be able to run on a newer computer. Could I call you back at about 9:00 a.m. Saturday morning to let you know what I find out from Jason?”

“That would be great!” Lisa remarked as she started adding a note to her calendar. “I’ll try to talk to some of those organizations you suggested to find out what resources they offer. Talk to you Saturday!”

2.2 Where Things Stand

Lisa grabbed a pen and her notebook as her phone started to ring Saturday morning. “Jan, thank you so much for calling me back. Those organizations you suggested were a gold mine! I can’t wait to tell you what I’ve learned!”

“I hope you don’t mind, but I have Jason with me.” Jan started. “I think he will be a great resource for us. Let me put him on speakerphone so he can join in.”

“Let me tell you what I have found out from the local social organizations,” Lisa began. “It turns out that one of the area groups had applied for a technology grant several months ago to provide a centralized connection point for providing services to families with special needs. They were awarded a small grant and created a dedicated area in their building for providing this resource. However, the person who had spearheaded the project recently moved away. The money has just been sitting there and they have been looking for the right person to fill the role. They gave me the job on the spot! I just wanted to help families make connections. I wasn’t looking for a part-time job, but what a great gift this could be to the community!”

“Let me jump in for a minute,” Jason began. “I’m relieved to hear that you have some money to buy some resources. I don’t think my mom’s database will work on newer computers. Thus, we are going to have to find something similar for you. How is the technology grant supposed to be used and what does it entail?”

“The technology grant was written to provide a computer, printer, and scanner for an office worker to coordinate services,” Lisa noted. “The building has Internet, but the room will need a wi-fi hotspot. The grant award was for \$2,500 and is supposed to cover hardware, software, networking, setup, and training. Thus, we don’t have a lot with which to work. The grant can be renewed each year for up to \$500 to help pay for technology, such as a website.”

2.3 Gathering the Requirements

“The computer needs to be capable of doing basic office activities such as email, Internet searches, writing letters and reports, and keeping track of budgets on spreadsheets.” Lisa began. “It will also be used for keeping tracking of people and trying to make connections... my original goal. I would like to have a database that could be used to keep track of families and their needs, job opportunities, social events, volunteers, and resource people. Since your mom’s database doesn’t sound like it will work, I am guessing that there are systems like that available. However, they are probably far out of our price range.”

“I can research cloud-based systems for you and try to get some prices and feature lists,” Jason suggested. “However, we’re supposed to design and develop a database for my class at school. It would be nice to kill two birds with one stone... create a project for the class that will, in turn, be beneficial to you. Do you have a plan for how you are going to get started and how your office is going to run?”

Lisa thought, “After placing several calls last week, I have a shortlist of contacts and activities that provide a nice starting point for the database. I plan on following up with those contacts next week to see if they can get me in contact with some of the families who might be interested in using the services and connections. From those initial contacts, I hope to build a core group of families who can help get our “connection point” off the ground.

Once we gain local recognition as a resource for families with special needs, I envision our operations to work similarly to what has worked for Jan. I will create a simple website to inform people of who we are, the purpose of our services, and the information we provide. On that website, I will also post general information about activities and events, contact information, and data collection forms to collect contact information from future clients, volunteers, and supporters, as well as information about upcoming events and opportunities.

A volunteer will follow up with inquiries from the website, emails, or calls as appropriate as well as vet the webform submissions for legitimacy. Legitimate data from the inquiries and web forms will be entered into the database. Families with special needs will be added to the weekly newsletter distribution list as requested. Notification of current opportunities and events will take place via the weekly email newsletter. However, information about opportunities requiring immediate attention will be shared via email upon receipt. Examples of things that might fall under this category include a job opening or last-minute tickets to a community event. A query could be run on the database to determine the families who might be interested in receiving detailed information about those types of opportunities.”

“Okay...” Jason interrupted, “what kind of data will you be collecting?”

“I thought you might ask that!” Lisa exclaimed. “I put a packet of materials together for you. I think we will need to collect data about the clients, opportunities, volunteers, and event sponsors. Some of that data includes contact names and addresses for both organizations and individuals who have reached out to the office to offer skills, services, or opportunities. The skills, services, and opportunities available are also described as well as a date on which the information was recorded, who recorded the information, the dollar amount associated with the event or service (if any), and the timeframe for which the offer stands. A lot of our general communication will take place via a weekly newsletter. Thus, we will also want to find out if the correspondent would like to be included on the weekly newsletter list.”

“I sent your mom an email a week or so ago with my questions for her. She replied with her answers beneath my questions. I think that email may provide you with a lot of the information you are wanting too. I also started putting together some lists of names and opportunities to enter into the database once it is created as well as a sample newsletter. All of those items are in your packet” (Appendices A-D).

“One last thing... Who is supposed to select, install, and train you on the technology?” Jason asked.

“I have already started researching different systems online,” Lisa began, “but I would welcome any suggestions you might have. I am used to working with office technologies, so I should be fine with those.”

“I’ll be glad to help you find and set up your computer. I’ll keep an eye open for the best deal.” Jason noted, “In the meantime, I think this would be a great project for my class. I would like to create a process model of what I think you envision your data collection and dissemination process will be so I can make sure we are on the same page. I’ll send that to you in the next couple of days and then we can go from there.”

3. ASSIGNMENTS

Students should assume the role of Jason, or a systems analyst consultant hired to assist Jason.

3.1 Process Modeling

Courses include systems analysis and design, process modeling, database development, or a graduate level MIS course.

Jason, the MBA-student, would like to draw the data collection and dissemination processes out on paper to verify that he understands how everything will work. He does not want to overlook any important data, details, or steps in the process.

- 1) Create diagrams modeling the process.
- 2) Write a short narrative to accompany your diagram to verify and support your interpretation of the process.

- 3) As the diagram is developed, record any assumptions you make in a separate document.

3.2 Systems Analysis Design and Database Development

Courses include systems analysis and design, database development, or a graduate level MIS course.

To start designing and developing the system, Jason wants to:

- 1) Accumulate the functional and technical requirements for the system.
- 2) Prioritize the requirements.
- 3) Create system development diagrams.
- 4) Create a data dictionary.
- 5) Create data entry forms.
- 6) Create queries to generate records needed for client, opportunity, service, and job lists; resource usage reports; and data needed for various mail-merged letters (e.g., newsletter, thank you letters).
- 7) Create reports for the queries including client, opportunity, service, and job lists; resource usage reports; and the newsletter.
- 8) As the database is developed, record any assumptions that you make in a short report.

AUTHOR BIOGRAPHY

Dana Schwieger is a professor of management information systems in the Donald L. Harrison College of Business and Computing at Southeast Missouri State University. She holds a PhD in Management Information Systems from Southern Illinois University–Carbondale. Her current research interests include information systems liability, adaptive structuration theory, health management information systems, teaching cases, and MIS curricula restructuring.



APPENDICES

Appendix A. Lisa's Initial Email

Hi Jan,

Thank you for setting aside some time for us to talk. Let me tell you about my vision.

Purpose: I would like to create a central location where families with loved ones who have special needs can connect to develop friendships, support systems, and opportunities for their loved ones to gain life skills, stimulate their minds, and engage in common activities.

Some of the kinds of activities that I had in mind include:

- **Classes** such as cooking, woodwork, painting, and gardening.
- **Fun activities** such as outings to the water park, professional sports games, concerts, cookouts or just getting together to watch a movie, or play board games.
- **Volunteer opportunities** in which the participants could work as a team on a community volunteer project such as a park clean-up day, a church service event, or one of the food packing events for Feed My Starving Children or the local food bank.
- **Jobs** short- or long-term opportunities for participants to be gainfully employed.

Questions for Jan:

1. What kinds of information should be collected about the participants?
2. What kinds of information should be collected about the activities or events?
3. What kinds of information should be collected about the event sponsors?
4. What kinds of information should be collected about the volunteers?

I'm sure there are things I am missing, but maybe that's a start.

Take care,
Lisa

Appendix B. Jan's Response to Lisa's Email

Hi Lisa,

You have some great questions! I have provided my answers to your questions below:

Question 1: *What kinds of information should be collected about the participants?*

Answer 1:

- The individual's name, guardian, contact information (phone, address, email, etc.), age, and whether or not the person wants to be included on the newsletter list.
- The individual's parent(s) or guardian(s)' contact information (phone, address, email, etc.), and whether or not the person wants to be included on the newsletter list.
- The individual's special need(s), capabilities of the individual, and the individual's interests.
- Any health issues that might be important to share, e.g., allergies, sensitivities, seizures, etc.
- Perhaps you would want to collect information about why the person is interested in being connected. What is their goal... socialization, a job, developing a supportive community, etc.?

Question 2: *What kinds of information should be collected about the activities or events?*

Answer 2:

- Some things you might consider include the event or activity basics such as name, date, time, location, target age, description, restrictions, limitations, cost, sponsor, and concerns.
- Whether or not the event is a one-time event or recurring.
- Any additional notes about the event.
- The contact person and their contact information for the event or activity.
- If the event is a job opportunity, then you would want to collect the job title, job description, employer, skills needed, workdays and times, remuneration, duration of employment, name, and contact information for the job poster.
- You might also want to include the name and date of the person who entered the data into the database in case there is a question.
- You might also want to include the date on which the information was collected as well as the date on which the information should be made available as well as removed.

Question 3: *What kinds of information should be collected about the event sponsors?*

Answer 3:

- The sponsor's name and contact information.
- Perhaps whether the sponsor is an individual or an organization.
- Perhaps a brief summary describing who the sponsor is and why they want to be involved.
- Perhaps you may want to include whether or not a background check has been done on the sponsor or should be completed.

Question 4: *What kinds of information should be collected about the volunteers?*

Answer 4:

- The volunteer's name, contact information (phone, address, email, etc.), perhaps their affiliation with a participant, sponsor, or organization, and whether or not the person wants to be included on the newsletter list.
- The volunteer's interest in becoming involved.
- The volunteer's talent or specialty area.
- Any health issues that might be important to share, e.g., allergies, sensitivities, seizures.
- Perhaps you would want to collect information about why the person is interested in volunteering.
- You may also want to include whether or not a background check has been done on the sponsor or should be completed.

If you have any other questions, please don't hesitate to ask me.

Best,
Jan

Appendix C. Lisa's Current Lists

Potential Volunteers

Name	Address	Phone	Email	Background Check	Newsletter
Lisa Williams	877 Sunshine St., Whispering Hills, MO 63701	573-555-1313	lwilliams@demail.com	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mark Williams	877 Sunshine St., Whispering Hills, MO 63701	573-555-1314	mwilliams@demail.com	<input type="checkbox"/>	<input type="checkbox"/>
Amy Martin	210 Broadway St, Whispering Hills, MO 63701	573-555-1414	amartin@demail.com	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Jan Andrews	466 Springhill St., Pine Bluff, IL 62901	573-555-1515	jandrews@demail.com	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Susie Williams	877 Sunshine St., Whispering Hills, MO 63701	573-555-1315	swilliams@demail.com	<input type="checkbox"/>	<input type="checkbox"/>

Clients and Potential Clients

Name	Address	Phone	Email	Contact Preference	Newsletter	Status
Bob Smith	115 Oakshire St., Whispering Hills, MO 63701	573-555-1212	bsmith@demail.com	email	<input checked="" type="checkbox"/>	Prospect
April Williams	877 Sunshine St., Whispering Hills, MO 63701	573-555-1312	awilliams@demail.com	text	<input type="checkbox"/>	Client

Clients and Guardians

	Address	Phone	Email	Contact Preference	Status
April Williams					
Mark Williams	877 Sunshine St, Whispering Hills, MO 63701	573-555-1312	awilliams@demail.com	text	Guardian
Lisa Williams	877 Sunshine St, Whispering Hills, MO 63701	573-555-1312	awilliams@demail.com	text	Guardian

Current Opportunities

Job

Part time job entering data

Hourly Rate \$10.00

Location: Archive Center

Sponsor: County Archives Center

Notes: Applicants must be able to enter data into a computer.

Start Date: 6/1/2021

Contact: Janna Thomas
573-555-3334
jthomas@email.com

Animal Socializer

Free \$0.00

Location: City Humane Society

Sponsor: City Park District

Notes: Applicants pets and walks animals

Start Date: 6/10/2021

Contact: Jason Roberts
573-555-2222
jroberts@email.com

Part time job shelving books

Hourly Rate \$10.00

Location: City Library

Sponsor: City Library

Notes: Lasts until grant ends

Start Date: 6/25/2021

Contact: Melissa Wilson
573-555-2223
mwilson@email.com

Social

July 4th Picnic at the Park

Free \$0.00

Location: Woodland Hills Central Park

Sponsor: City Park District

Notes: Bring a lawn chair.

Start Date: 6/4/2021

Contact: Jason Roberts
573-555-2222
jroberts@email.com

Swim Party

Cost \$2.00

Location: City Pool

Sponsor: City Park District

Notes: Each participant must have a chaperone present.

Start Date: 6/25/2021

Contact: Jason Roberts
573-555-2222
jroberts@email.com

Summer Dance

Free \$0.00

Location: City Park Main Pavillion

Sponsor: City Park District

Notes: Each participant must have a chaperone present.

Start Date: 6/11/2021

Contact: Jason Roberts
573-555-2222
jroberts@email.com

Appendix D. Lisa's Sample Newsletter

Whispering Hills Connections Newsletter

6/2/2021

Dear April,

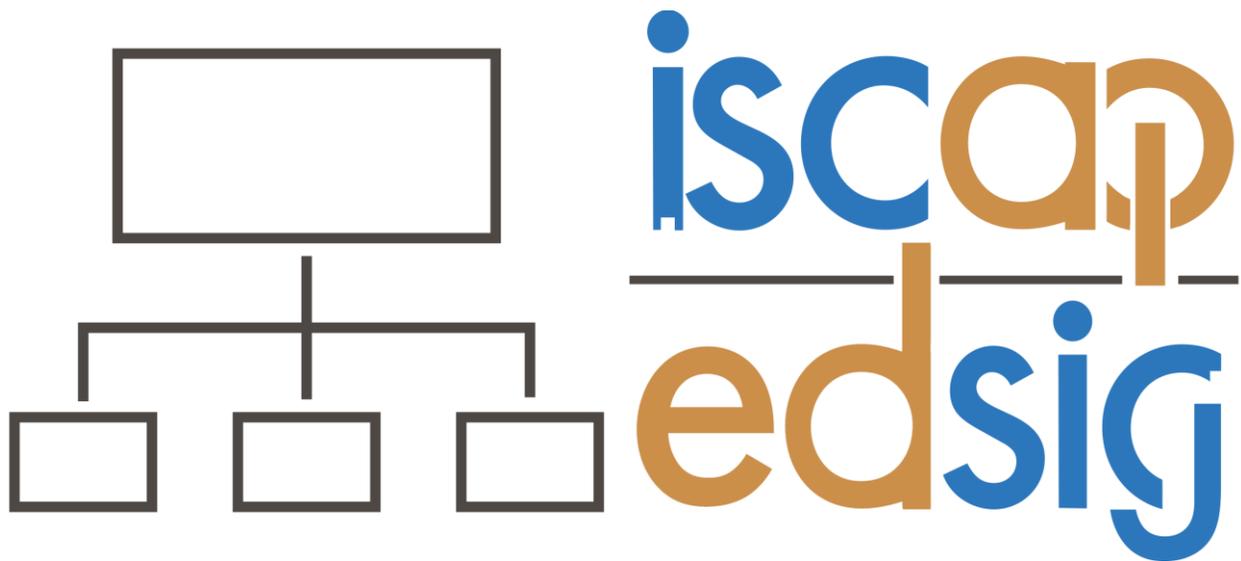
We are excited to let you know of upcoming events and opportunities. Please contact us if you have any questions.

Events and Activities

	Upcoming Events	Date	Time	Cost	Location
1	Summer Dance	6/11/2021	7:00 – 9:00 p.m.	Free	Community Center
2	Summer Swim Party	6/25/2021	6:00 - 8:00 p.m.	\$2.00	City Pool
3	July 4 th Picnic at the Park	7/4/2021	11:00 a.m.- 1:00 p.m.	Free	Woodland Hills Central Park

Job and Volunteer Opportunities

	Opportunity	Description	Dates	Time	Payment	Location
1	Data Entry Clerk	Enters form data into database 2 hrs/day- 2 days/wk	6/01/2021 - 8/02/2021	9 – 11:00am	\$10 per hr	Archive Center
2	Library Assistant	Reshelves books 2 hrs/day- 3 days/wk	6/25/2021 – Until grant ends	8 -10:00 am	\$10 per hr	City Library
3	Animal socializer	Pets and walks animals.	6/10/2021 - indefinitely	To be discussed	Volunteer	Woodland Hills Humane Society



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ISSN 2574-3872