MID-SEMESTER AND END-OF-SEMESTER EXAMINATIONS (KCC)

1ST SEMESTER 2022/2023 ACADEMIC YEAR

DATE: OCT/DEC 2022

**COURSE CODE: CS309**

**COURSE TITLE: SYSTEM ANALYSIS AND DESIGN**

**CASE STUDY**

LECTURER NAME: FRANCIS AVEVOR

INSTRUCTIONS TO CANDIDATES

ANSWER ALL QUESTIONS

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|  | **CASE STUDY**  **SHINGLE SPRINGS PHARMACY INVENTORY MANAGEMENT SYSTEM**  There are approximately 22,000 independent pharmacies in Africa. The modern pharmacy landscape is constantly changing and growing to serve communities large and small, while facing hurdles including reimbursement issues, complex medication regimens, and narrowed patient access. Given these challenges, pharmacy managers must choose wisely when investing in equipment and technology intended to maximize space, accuracy, and productivity. The TCGRx Beacon Pharmacy Inventory Management System supplies a range of scalable technologies and strategies to meet pharmacy needs and improve operations no matter the size or scope of a particular facility.  In 2016, Kwesi Bokor was working at an independent pharmacy in the San Francisco Bay Area and seriously considering pharmacy ownership in Africa. His direction shifted a bit when a job posting appeared for a startup pharmacy manager in his hometown of rural Ashale-Botwe, Accra. The Shingle Springs Health & Wellness Center is an African Herbal and Orthodox Health Service pharmacy owned and operated by the local tribesmen. Serving a unique community can change some of the usual assumptions of pharmacy management, including the common constraints around relying upon a specific formulary.  “Our philosophy is not the same as a typical retail pharmacy,” Kwesi Bokor noted. For example, he said, “We don’t have a strict focus on lean inventory. We try, instead, to have everything in stock to provide the best customer service possible.” Maintaining an expansive inventory, however, can create spatial, organizational, and access challenges that could potentially contribute to inefficiency and dispensing errors. The right solution would provide storage, enable speed, and enhance safety, all at the same time.  **The Decision**  Kwesi Bokor was a decision maker involved in choosing equipment for Shingle Springs before the doors even opened in June 2017. He researched shelving options and found that the TCGRx Beacon System’s variety of high-density storage cabinets were a very attractive feature for a new startup pharmacy with large storage needs. “They provided us with a lot of space to start with,” Bokor said, “and we have room to grow.” Beacon also provides the ability to pull medications directly from storage, without having to rely on or bypass a robotic dispensing system. “This was a key point for us,” Bokor said.  **The Results**  Shingle Springs has been accepting commercial, national, and mutual insurance plans since December 2017. They currently average 250 prescriptions a day, and they are only picking up speed. “We have a lot of patients with complicated drug regimens and those who live in remote areas,” Bokor said. “When they come in for their visits, efficiency is nice. We try to button everything up and can usually get things answered pretty quickly.” Working from a number of formularies means the need to shelve a vast inventory. The Beacon storage system consolidates the pharmacy’s footprint through minimizing on-hand inventory, increasing inventory turns, and reducing expired medications.  Shingle Springs is able to provide a high level of service thanks to their ability to consult with in-house providers combined with a comprehensive inventory, stocked and dispensed via a tailored TCGRx pharmacy storage solution.  Shingle Springs currently employs the Beacon high-density storage solution as well as the company’s associated DeliverRx will-call cabinet. The will-call system utilizes the same “directed by light” and bar-code identification technology that other TCGRx solutions rely on, minimizing staff members’ learning curve. DeliverRx securely contains all will-call prescriptions in a single, easy-to-find location, further reducing customer wait times and making pick-ups clearer and less prone to error. Bodtker hopes to purchase a compatible refrigeration unit as well. The pharmacy is also incorporating the TCGRx SmartCardRx™ blister-packaging system within the next year. “We currently have 30 or so patients on manual-fill blister packs,” Bokor said, “and we want to establish a solid client base.”  Finally, Shingle Springs will be expanding to include a long-term care facility on the reservation, which will require an automated medication dispensing system. “TCGRx’s PharmLoc™ cabinet would be the perfect segue for us,” Bokor said. When a single company provides a comprehensive, configurable system, growing a pharmacy is easy and quality control stays in sync. “I have worked in pharmacies doing less that felt much busier,” Bokor said. “We save footsteps and we get prescriptions to people quicker and safer.” For Shingle Springs, Bokor said, relying on TCGRx and Beacon means increased efficiency along with greater dependability. “Thanks to Beacon, a larger inventory actually means we are less harried and more accurate. Our error binder is thin because there just isn't much going into it.  **The Proposed System**  Shingle Springs Pharmacy has appointed you as the Systems Analyst to lead a team of software engineers to design, develop and implement a robust, user-friendly web-based pharmacy management system for use in its operations. |  |

**REQUIRED:**

**Part 1: DUE BEFORE MID-SUMMER EXAMINATIONS**

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|  | 1. Create a comprehensive list of interview questions (arranged into three categories: questions about processes, questions about data, and general questions about the organization) that you would ask the Administrator and other staff of the Pharmacy. 2. Create and explain a list of opportunities and objectives of the proposed Shingle Springs Pharmacy System. 3. Provide the functional requirements and non-functional requirements for the Shingle Springs Pharmacy System; and justify them. 4. Discuss the software acquisition strategy that you would recommend for this project; and provide justification for it. 5. Design five reports that should be generated from the proposed Shingle Springs Pharmacy System for the above project. 6. Construct Entity Relationship Diagrams for the scenario outlined for the above case study. | **AP[10 marks]**  **AP[5 marks]**  **AN[10 marks]**  **EV[10 marks]**  **CR[10 marks]**  **CR[15 marks]** |
| **[Total: 60 Marks]** | | | |

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| **Part 2: DUE BEFORE END-OF-SUMMER EXAMINATIONS** | | | |
|  | 1. As the Chief System Analyst duly appointed as Project Manager for this project, discuss your main duties and responsibilities on this project, problems you may encounter on this project; and how you can possibly solve each of the problems you identify. 2. Perform comprehensive technical, operational and economic feasibility analyses of the proposed Shingle Springs Pharmacy System, and provide adequate justification for it. 3. Construct data flow diagrams (including a context level diagram, a level 0 diagram, and several child diagrams) that show important, representative parts of the proposed Shingle Springs Pharmacy System. 4. During the systems design phase of this project, you are considering using either a Decision Table or Decision Tree to depict some important operations of the organization. 5. Compare and contrast the use of Decision Table and Decision Tree for this project. 6. Discuss which of the above two process/operations modelling documentation tools you would use for this project; and clearly justify your answer (by discussing your reasons). 7. Prepare hardware and software specifications that you consider appropriate for this project.   6. Discuss the system changeover method/approach that you consider most appropriate for use for the proposed Shingle Springs Pharmacy system; and justify your answer. | **AP[10 marks]**  **AP(25 marks)**  **CR(30 marks)**  **EV(10 marks)**  **AP[5 marks]**  **CR[5 marks]**  **AP[5 marks]** |
| **[Total: 90 Marks]** | | | |

**END OF QUESTION PAPER**