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**TUNKU ABDUL RAHMAN UNIVERSITY OF MANAGEMENT AND TECHNOLOGY FACULTY OF COMPUTING AND INFORMATION TECHNOLOGY**

**Assignment**

**BACS1024 Introduction to Computer Systems**

Feb 2024 Semester

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| **Student's name** | **:** (1) Gan Jing Yan | (2) Chia Yi Chen | (3) Gooi Jin Li |
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| **Programme & Group** | **: RIS Group2** |  |  |
| **Tutor's name** | **: Ms Roziyani Binti Setik** |  |  |
| **Date of Submission** | **: 23/3/2024** |  |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **Student** | **Part I** | **Part II** | | | | **Total / Grade** |
| **10** | **10** | **10** | **10** | **10** | **50 marks** |
| 1. Gan Jing Yan |  |  |  |  |  |  |
| 1. Chia Yi Chen |
| 1. Gooi Jin Li |
| Comment: | | | | | | |

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**Coursework Declaration**

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| --- | --- | --- | --- | --- | --- | --- |
| **Semester:** | Feb 2024 Semester | | **Course Code & Title:** | | BACS1024 Introduction to Computer Systems | |
| **Declaration**  **I / we confirm that I /we have read and shall comply with all the terms and conditions of TAR UMT’s plagiarism policy.**  **I / we declare that this submitted work is free from all form of plagiarism and for all intents and purposes is my own properly derived work.**  **I/We further confirm that the same work, where appropriate, has been verified by anti-plagiarism software**  ***(please insert).*** | | | | | | |
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| Name(s): | | (1) Gan Jing Yan | | (2) Chia Yi Chen | | (3) Gooi Jin li |
| Date: | | 22/3/2024 | | | | |

**Assignment - Assessment Rubrics**

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| --- | --- | --- | --- |
| **Student's Name** | **: (1) Gan Jing Yan** | **(2) Chia Yi Chen** | **(3) Gooi Jin li** |
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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Part I:**  **CLO3: Utilise relevant techniques, algorithms, mathematical and logic operations to solve programming problems. (C4, PLO6)** | | | | | | | |
| **Criteria** (Group basis) | **Incompetent** **Highly competent** | | | | | **Remark** | **Score (10 marks)** |
| **0-2** | **3-4** | **5-6** | **7-8** | **9-10** |
| **Use of information and digital technologies: Problem solving / communication / ethics (10 marks)**   * Excellent application concept based on in-depth analysis. * Well formatted report. * Able to provide sound justification. * Well-structured flow chart. * Proper use of relevant techniques, algorithms, mathematical and logic operations |  |  |  |  |  |  |  |
| **Part II:**  **CLO2: Produce practical solution related to computer systems by applying hardware, assembly language programming and operating system commands and scripting skills. (P3, PLO3)** | | | | | | | |
| **Criteria** (Group basis) | **Incompetent** **Highly competent** | | | | | **Remark** | **Score (10 marks)** |
| **0-2** | **3-4** | **5-6** | **7-8** | **9-10** |
| **Data structure / program comment / Program control (10 marks)**   * Proper process flow. * Proper naming convention used. * Reusable program codes. * Dynamic use of program code. * Sufficient program comment. |  |  |  |  |  |  |  |
| **I/O facilities (10 marks)**   * Appropriate instructions. * Appropriate I/O design. * Sufficient I/O validation. * Proper error message. * User friendly. |  |  |  |  |  |  |  |
| **Run / debug program (10 marks)**   * No logical error. * No run time error. * Appropriate output. * Appropriate output message. * Appropriate program logic. |  |  |  |  |  |  |  |
| **Advanced features (10 marks)**   * Fulfill basic requirement. * Use of complex algorithm. * Able to solve complex problem. * Include innovative idea. * Well-designed program |  |  |  |  |  |  |  |
|  | | | | | | | **/ 50** |

**Proposed System's Name/Title**

BagStore System

**Introduction/Background:**

BagStore POS is a complete system designed to transform how bag stores operate, offering tools to simplify tasks and improve the shopping experience for both staff and customers. Using the latest technology, BagStore POS provides an easy-to-use interface for managing sales, inventory, and customer interactions. Store staff can easily navigate the system to add products, process sales, manage inventory, and interact with customers. With its simple design, BagStore POS ensures that anyone can quickly learn and use it effectively, reducing training time and improving efficiency.

Additionally, BagStore POS offers ways for stores to use the system to make customers happier and increase sales. For example, staff can use the system to track customer preferences, purchases, and feedback. By understanding customers better, stores can personalize the shopping experience by recommending products, offering promotions, and providing great service. BagStore POS also helps stores run loyalty programs, where customers can earn rewards or discounts based on their purchases, encouraging them to come back.

Furthermore, BagStore POS can easily work with other business tools like accounting software, online stores, and marketing tools. This helps stores streamline operations, share data between systems, and use additional features to improve their business. Whether it's managing online orders, tracking marketing results, or analyzing sales, BagStore POS is flexible and adaptable to the needs of bag stores in today's competitive market.

**Advantages/Justifications of Implementing the Proposed System**

* Streamlined Sales Process:
  + BagStore POS makes selling bags easier by providing a simple way for store staff to handle transactions. With features like scanning barcodes and accepting different payment methods, it speeds up sales and reduces mistakes. For example, when a customer picks a bag, the system updates the inventory, calculates the total price, and prints a receipt quickly. This makes checkout faster and more convenient for customers, keeping them happy.
* Enhanced Customer Engagement:
  + Customers get personalized service and easy checkout with BagStore POS. The system remembers what customers like to buy and offers them special deals or suggestions. For instance, if someone often buys backpacks, the system might suggest matching accessories or let them know about discounts on backpacks. Also, by offering loyalty program perks like points or discounts, BagStore POS encourages customers to come back and shop again.
* Optimized Inventory Management:
  + BagStore POS helps stores keep track of their bag stock in real-time and automatically updates inventory levels. When bags are sold or restocked, the system keeps everything up to date. For instance, if a bag is scanned at checkout, the system subtracts it from the inventory and alerts staff if stock gets low. This prevents running out of stock or having too much inventory, saving money and ensuring customers find what they need.
* Informed Decision-Making:
  + BagStore POS gives store owners useful information through reports and analytics. By looking at sales data and customer behavior, owners can see which bags are popular and when sales peak. For example, reports from BagStore POS might show which bag styles customers prefer or which promotions bring in the most sales. With this information, owners can make smart decisions about what to stock, how to price items, and where to focus marketing efforts to grow the business.
* Secure Transactions:
  + BagStore POS keeps customer and store data safe with strong security features. With things like secure payment processing and data encryption, it protects sensitive information from hackers. For example, when a customer pays with a credit card, BagStore POS encrypts the transaction details before sending them, ensuring the data stays safe. This builds trust with customers, making them feel confident about shopping at the store.
* Scalability and Adaptability:
  + BagStore POS can grow and change with the business, adapting to new needs and technology. Its flexible design allows for easy updates and adding new features as the store expands. For instance, if the store starts offering new products or opens more locations, BagStore POS can handle the extra workload without any problems. Also, with regular updates and support, BagStore POS stays up to date with industry changes, ensuring it continues to meet the store's needs over time.

**System Functions with Explanations**

* Sales Transaction Processing:
  + BagStore POS simplifies the selling of bags in retail establishments. From the customer's initial item selection to the last stage of accepting several payment methods, it streamlines the entire transaction process. The system makes sure that discounts, promotions, and various payment methods are handled smoothly, which improves both operational efficiency and the general client experience.
* Inventory Tracking and Management:
  + BagStore POS offers extensive features for inventory management. It gives retailers precise inventory control over the number of bags they have on hand and informs them when supplies are about to run low. Additionally, the system helps with replenishment orders when needed, making sure that retailers keep the right amount of inventory on hand to satisfy consumer demand.
* Product Catalog Management:
  + This feature empowers stores to efficiently manage their bag products within the BagStore POS system. Store owners or managers can easily add, update, and organize product listings, ensuring that the store's inventory remains current and organized. By simplifying catalog management tasks, the system contributes to smoother operations and improved customer satisfaction.
* Confirmation Order:

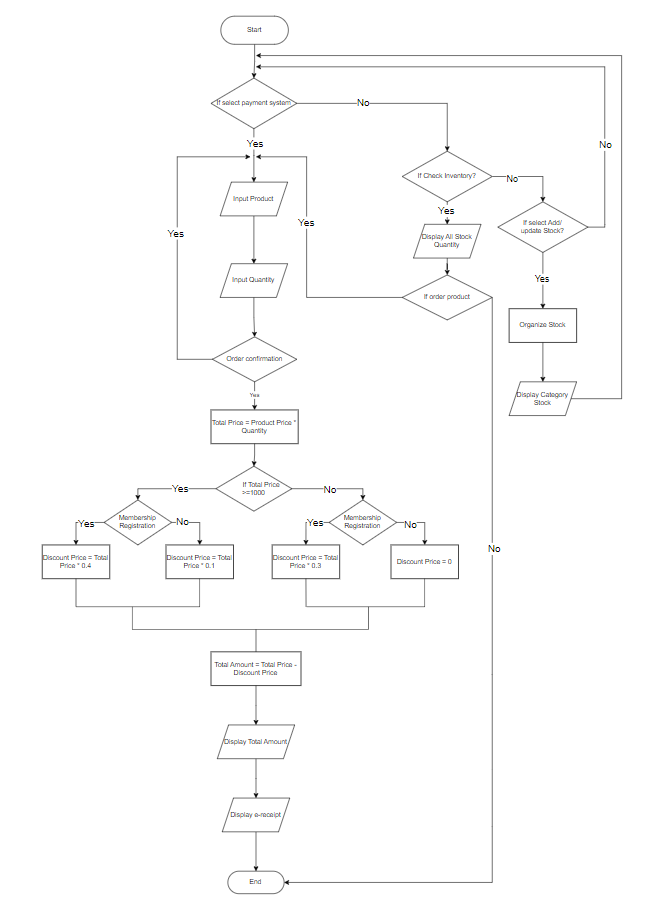
BagStore POS incorporates a confirmation order step in the transaction process. After customers have selected their desired products, the system confirms the order, allowing customers to review their selections before proceeding to payment. If customers decide not to proceed with the transaction, the system seamlessly returns to the product selection stage, providing a user-friendly experience.

* Membership Management :
  + BagStore POS feature makes store membership administration easier. Employees in the store can quickly add new members, amend member information, and view purchase history. Members also get exclusive benefits and discounts, which encourages recurring business and loyalty. This feature helps to enhance sales and customer retention by fostering customer relationships.
* Display e receipt:
  + BagStore POS display the overall Order transactions of total payment and the quantity of the product purchase d after the customer's payment is Successful which shows the confirmation of the order of the product to the customer and seller which was successful completed.

**Mathematical Formula(s) Involved and Brief Explanations**

* Variables:
  + Quantity: The number of bags purchased.
  + Unit Price: The price of one bag.
  + Total Price: The total cost of the purchase before any discounts are applied.
  + Discount Percentage: The percentage of discount to be applied to the total price.
  + Total Price: The total cost of the purchase before any discounts are applied.
  + Discount Price: The amount of discount applied to the total price.
* Total Price Calculation:
  + Formula: Total Price = Quantity \* Unit Price
  + Explanation: Calculates the total cost of selected items based on the quantity of bags purchased and their unit price.
* Discount Price Calculation:
  + Formula: Discount Price = Total Price \* Discount Percentage
  + Explanation: Determines the discount amount based on the total price of the purchase and the discount percentage applied.
* Total Amount Calculation:
  + Formula: Total Amount = Total Price – Discount Price
  + Explanation: Calculates the final amount payable by subtracting the discount from the total price of the purchase.

**System flow chart**

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