

CSE471

Assignment 02

1. A business wants to create an application to partially automate its hiring process. The candidate must pass several stages before being hired by this company. Initially, a candidate will create an application using the app. The applicant's application will be reviewed by the recruitment team after it has been submitted. If the recruiter is interested in the application, a test will be administered online via the application. The hiring staff may, however, bypass the online test and schedule an interview instead for excellent candidates with more experience. After appearing on the online test if and only if the score is greater than or equal to 80% then the recruitment team will schedule an interview for the applicant. The interviewer will conduct an interview with the candidate. If the candidate passes the interview the recruitment team will prepare an offer and fix a salary for the candidate concurrently. The candidate after reviewing the offer can either accept or reject the offer. If the candidate chooses to accept it then the recruitment team will hire the candidate. On the other hand, the recruiter may reject the application while reviewing it, if the online test result is below 80%, or if the interviewer decides against the candidate after the interview. Draw a **swim-lane activity diagram** for the above scenario.

2. Assume you are a software architect who establishes technical standards and makes high-level design decisions for company X. Additionally, these diagrams depict and clarify the requirements and context of the key system components.

Company X wants to develop an automated parking rental system for its client. As a software architect, you choose to create a use case diagram to help your client visualize the system after completing some research on the project. The user will be able to reserve a parking place through this app if one is offered for rent. For reserving a parking place the user must register to the system using their NID or passport. If a reservation is accepted by the owner (person who offers a parking space for rent) then the user will receive a confirmation. Our system would keep track of how long a user spent utilizing the parking facility. At the time of check-out user needs to complete the payment for using the parking facility. If a user uses this facility for the first time, the service is free; otherwise, a fee must be paid in cash or by credit/debit card. For promoting cashless payment the client urges to facilitate a discount for the user. Therefore, company X decides to offer coins for card payments that may be exchanged for discounts on subsequent transactions. However, in case a reservation is declined the system will showcase other parking spots that are available at that moment. A parking spot can only be offered by an owner once it has been verified by our security team, keeping in mind the security issues. The security team physically visits the location for verification, gathers ownership documentation for the parking space, and obtains access to the parking space's security camera. If the place is under CCTV surveillance then it would be considered a premium parking spot.

Draw a **Use-case** diagram based on the above information.

3. Student Assistance Fund (SAF) authorization has a number of steps in its approval process. A

SAF authorization form is used in most universities to approve funding for students to aid their studies. Suppose a student fills out a blank form and sends it to his or her departmental chairperson for a signature. If the amount of funds requested by the student is small (under Tk. 10,000), then the chairperson signs the form and routes it to accounts payable to be input into the accounting system. The system cuts a check that is sent to the student for the right amount, and after the check is cashed, the form is filed away with the canceled check. If the check is not cashed within 30 days, the form expires. When the amount of the requested fund is large (over Tk. 10,000), the chairperson signs the form and sends it to the chief financial officer along with a paragraph explaining the reason for the grant, and the chief financial officer will sign the form and pass it along to accounts payable. Both the chairperson and the chief financial officer can reject the SAF authorization form if they do not feel that the reasons for seeking funding are reasonable. In this case, the student can change the form to include more explanation or decide to pay the entire fee.

Design an activity diagram based on the above information.