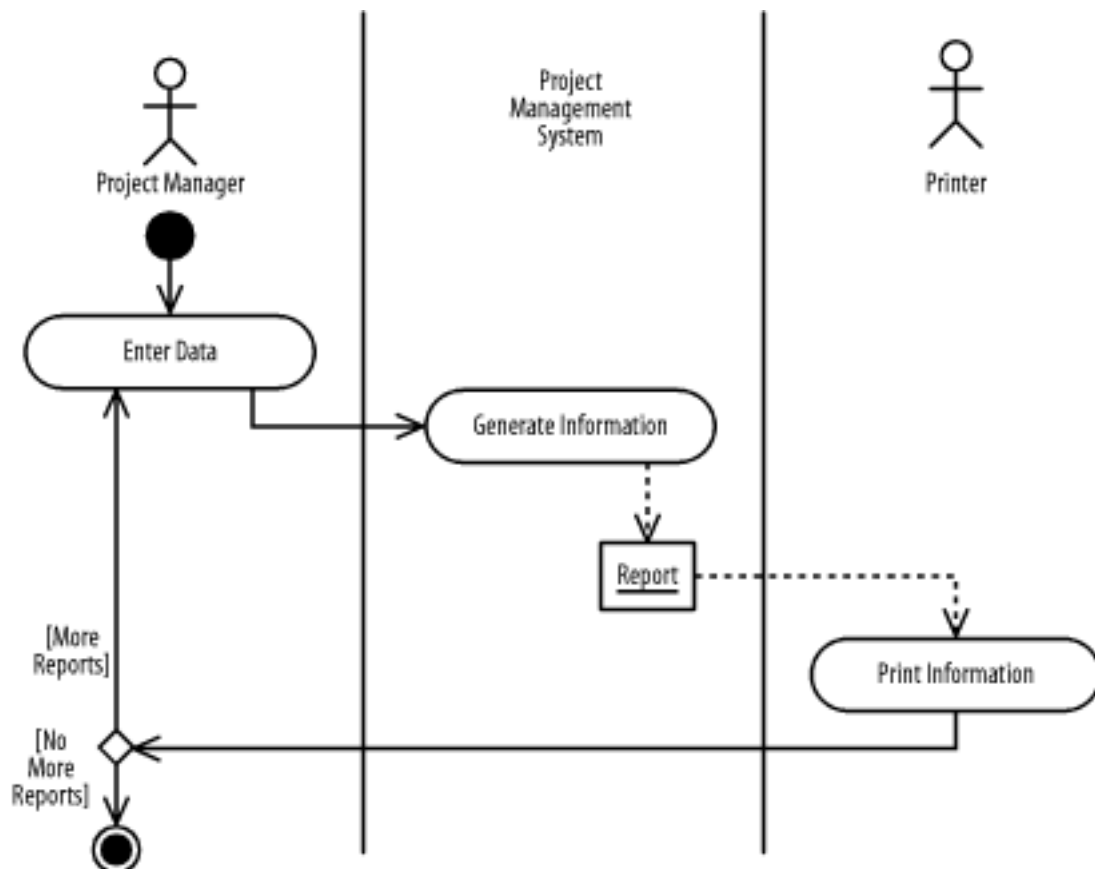**Tutorial 03: CO 328**
Group work: 3 students
Deadline: 27th March 2020

Question 1.
Describe the following figure, an activity diagram that describes the action states and flow transitions between action states for a project manager printing a report using the project management system: identify action states and flow transitions.

Update the above figure stepwise to show the following details (draw an activity diagram for each incrementing scenario).
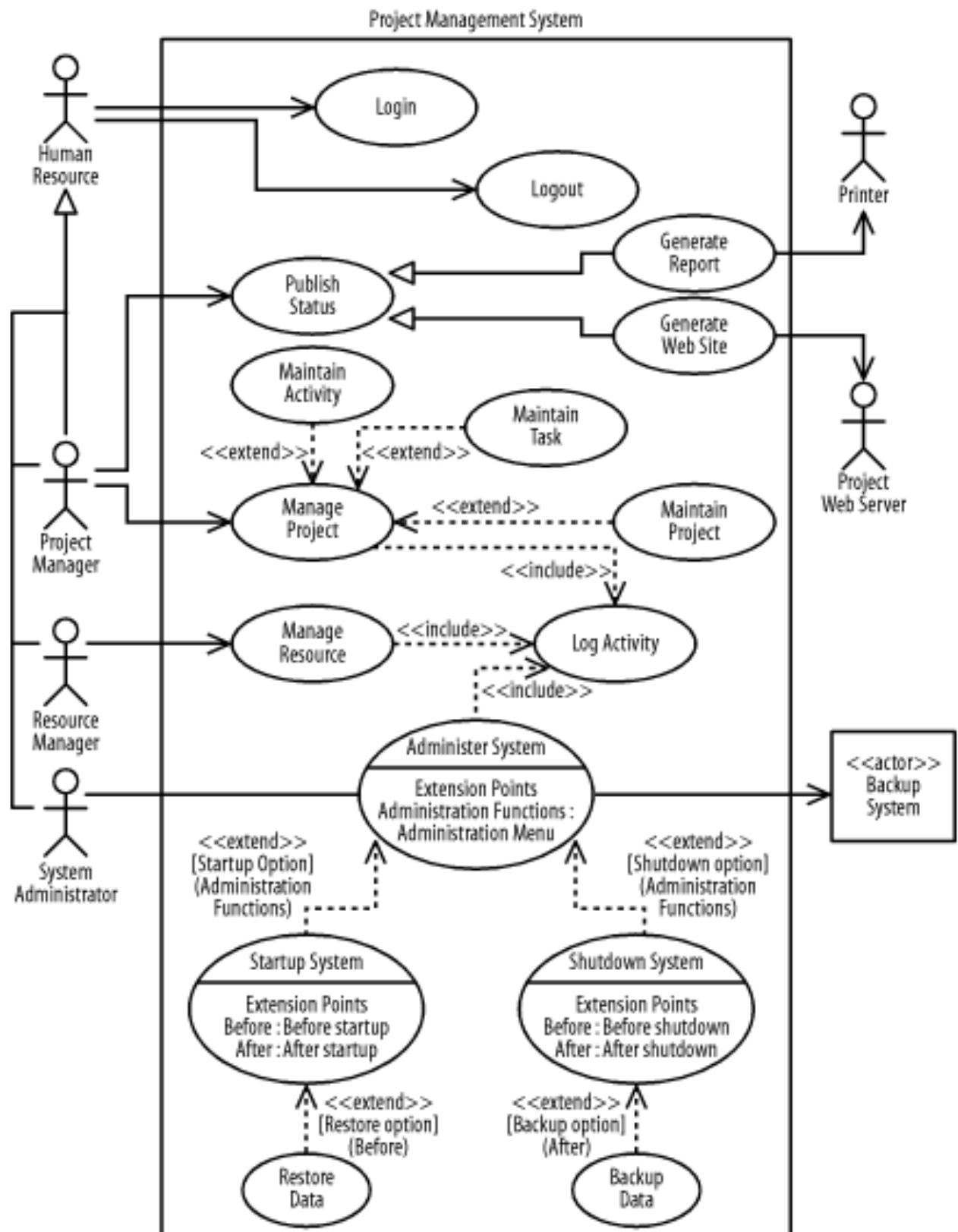
a. The Enter Data action state outputs a Report Criteria object that is then input by the Generate Information action state.

b.The Generate Information action state transitions to the Print Information action state only if the report is successfully generated; otherwise, the project management system generates an error using the Generate Error action state. In either case, the project manager may choose to print more than one report.

c. The project management system must simultaneously generate a report using the Generate Information action state (as well as handle error processing discussed in part b) and execute other processing using the Other Processing action state. Once the report is printed and other processing is handled, the project manager may choose to print more than one report.

Question 2.

Describe the following figure, identify actors and use cases, and describe the relationships among actors and use cases.

Project Management System

Login

Logout

Generate Report

Generate Web Site

Publish Status

Maintain Activity

Maintain Task

Manage Project

Maintain Project

<<extend>>

<<extend>>

<<extend>>

<<include>>

Manage Resource

<<include>>

Log Activity

<<include>>

Administer System

Extension Points
Administration Functions :
Administration Menu

<<extend>>
[Startup Option]
(Administration Functions)

<<extend>>
[Shutdown option]
(Administration Functions)

Startup System

Extension Points
Before : Before startup
After : After startup

Shutdown System

Extension Points
Before : Before shutdown
After : After shutdown

<<extend>>
[Restore option]
(Before)

<<extend>>
[Backup option]
(After)

Restore Data

Backup Data

Human Resource

Project Manager

Resource Manager

System Administrator

Printer

Project Web Server

<<actor>>
Backup System

Update the diagram shown in above figure stepwise to show the following details (you don't need to redraw the entire diagram, but clearly draw the necessary part of the diagram in each incremental scenario).

a. A human resource may manage his professional development plan. When managing his professional development plan, the human resource may manage his profile. In managing his professional development plan, he will have access to a training schedule provided by a training database, and all the information pertaining to his professional development plan will be stored in a professional development plan database. Both databases are not part of the project management system.

b. When a resource manager manages resources, she will have access to resource functions that are provided on a resource menu. One option is to manage a resource's profile. This is the same functionality used by human resources to manage their profiles.

c. A project manager or system administrator, acting as an email user, may send email using an email system that is not constructed as part of the development effort (it may have been purchased). When sending email, the manager may select a secure option wherein his whole interaction with the system is secured using a purchased encryption engine. Note that this is not simply encrypting the sent email message, but encrypting the entire interaction as the email is composed and sent.

d. An email system may be used to receive email messages. When a message is received, the email user is informed. Likewise, an email user may query the system to check whether new messages have arrived, depending on how often her system is set up to check for new messages.

e. When sending or receiving email, the system logs the transaction. This functionality for logging transactions may be used by other use cases in the future.

Question 3

Describe the following figures: identify the various elements. These elements are used for generating a report and its sections.
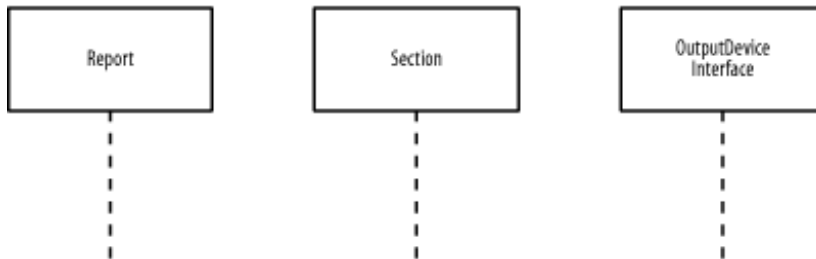

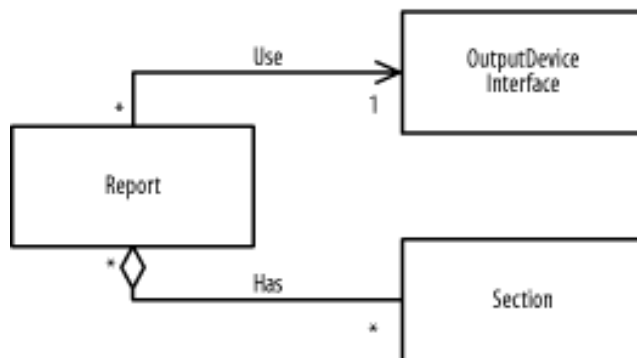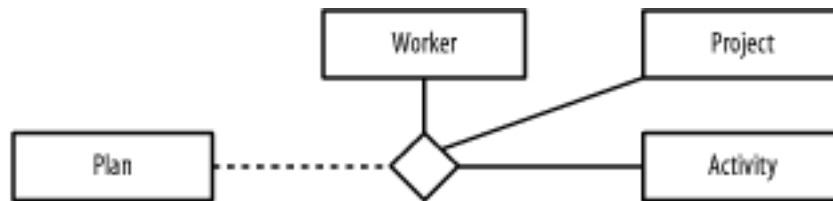Figure 1. Sequence diagram for generating a report and its sections

Figure 2. Collaboration diagram for generating a report and its sections

Update the diagrams stepwise to show the following interaction and collaboration.

a. For each section, the Report element retrieves the section's data using the OutputData := GetData ( ) communication sent to the Section element, and formats the data using the OutputData := FormatData (OutputData) communication sent to itself.

b. If the section's data is not summary data, the Report element simply outputs the data to the OutputPrinterInterface element using the OutputNonSummaryData (OutputData) communication sent to the OutputPrinterInterface element.

c. If the section's data is summary data, the Report element simply outputs the data to the OutputPrinterInterface element using the OutputSummaryData (OutputData) communication sent to the OutputPrinterInterface element.

d. Draw the static class diagram referring to the collaboration diagram you got in section c.

Question 3.

1). Describe the following figure: identify the classes and their associations.

Update the diagram stepwise

a. A plan pertains to a single project and involves one or more workers and one or more activities.

b. A worker may have zero or more plans, and a plan must belong to a single worker.

c. Each plan contains a single schedule. Given a plan, you can determine its schedule, but given a schedule, you are unable to determine the plan to which it pertains.

d. When an activity is on a schedule, it is called a scheduled activity, and the start date, end date, and duration are maintained for the scheduled activity. Each schedule may have zero or more activities, but an activity must be associated with a single schedule.

2). A company consists of departments. Departments are located in one or more offices. One office acts as a headquarter. Each department has a manager who is recruited from the set of employees. Your task is to model the system for the company.

Draw a class diagram which consists of all the classes in your system their attributes and operations, relationships between the classes, multiplicity specifications, and other model elements that you find appropriate.