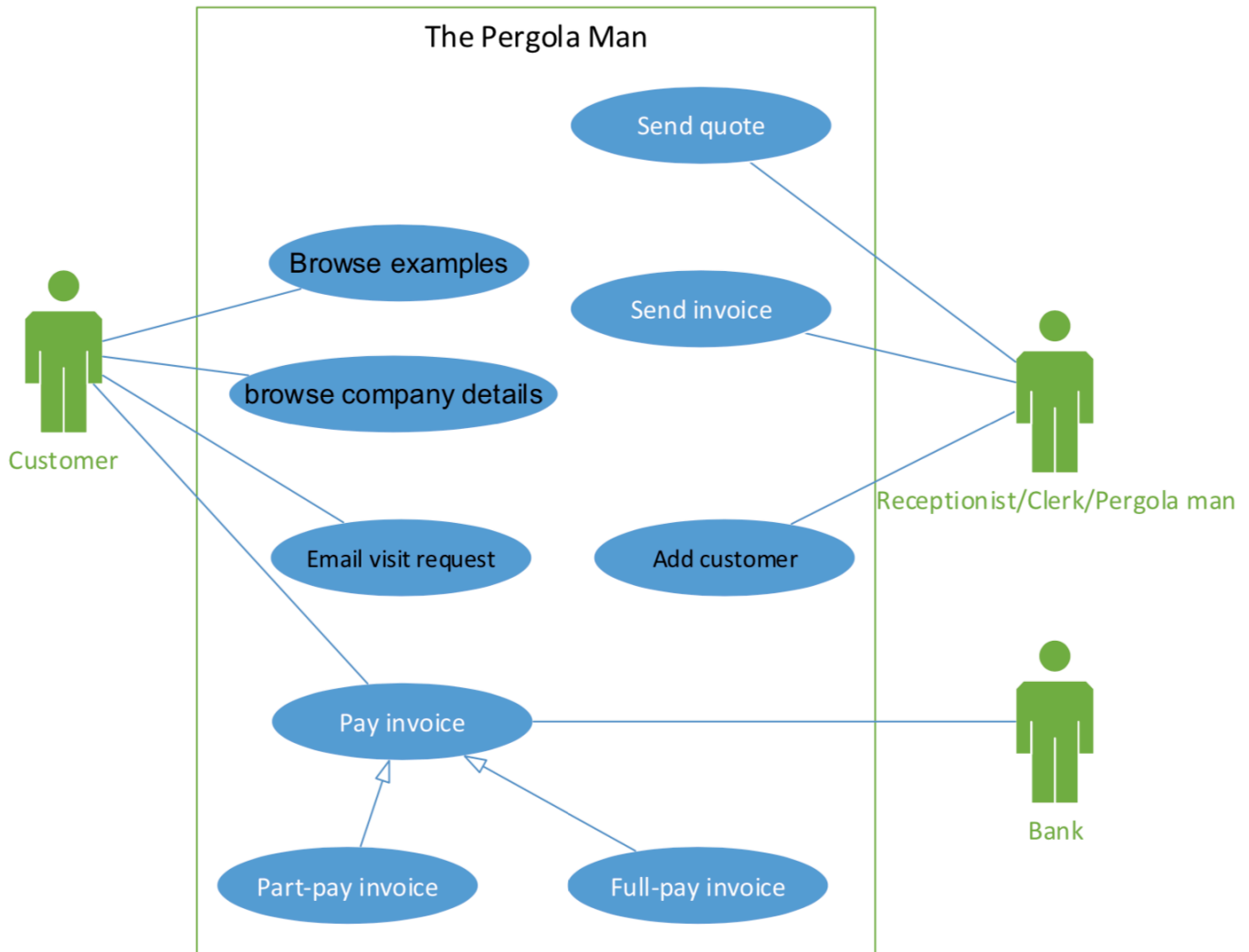# Tutorial 10: Activity and System Sequence Diagrams

In this tutorial, we will consider the use case elaboration (or use case description) models developed in Tutorial 9 for the Pergola Man scenario (see below) and draw both the Activity and System Sequence diagrams for the use cases illustrating the flow of activities and exception conditions.

The Pergola Man

The Pergola Man operates in the northern suburbs of Perth, building pergolas and gazebos for private customers. When a customer approaches him, he visits their house, takes measurements and then discusses possible pergolas or gazebos which might interest the customer. As a result of this discussion, the Pergola Man sends the customer a detailed quotation. The customer may or may not accept the quotation. In due course the customer is sent an invoice for the work done. The Pergola Man allows part-payments over six months in order to encourage more business.

The Pergola Man is considering creating a website as a means of attracting new customers. He anticipates the website will allow customers to browse examples of his work, browse company details including likely prices and timescales, email him with a request for a visit and permit (part-)payment of invoices.

1. Open your solution for the use case elaboration model for "*Pay invoice*" that you developed as part of the activities in Tutorial 9, or download the sample solution from the unit blackboard site for that tutorial.

2. Using MS Visio, draw a UML activity diagram for the selected use case illustrating the flow of activities and exception conditions.

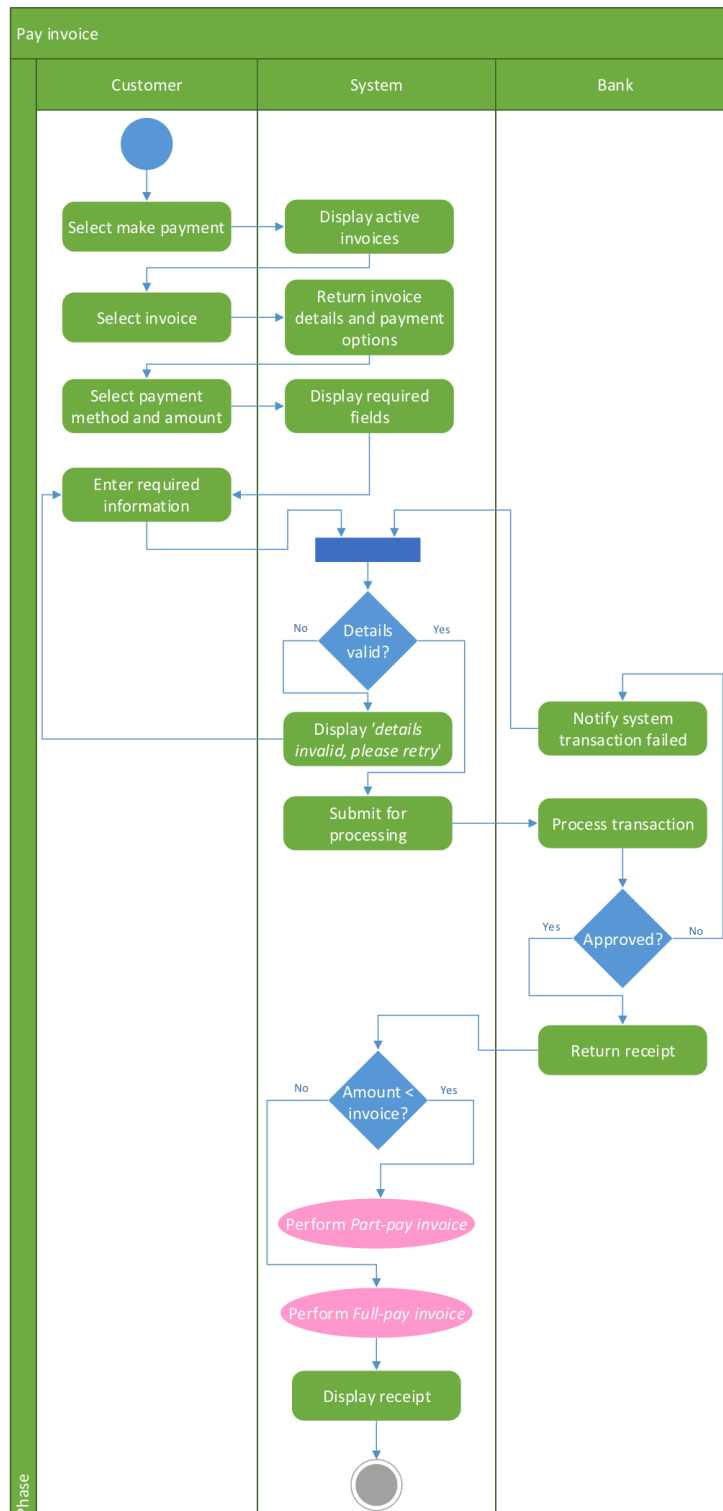Follow the following steps to draw the activity diagram:
Step 1: Identify the agents to create the appropriate swimlanes.
Step 2: Follow the various steps of the workflow and then make appropriate ovals for the activities.
Step 3: Connect the activity ovals with arrows to show the workflow.
Step 4: Use other symbols as appropriate:
- Use a decision symbol to represent an either/or situation
- Use synchronisation bars for parallel paths

3. Using MS Visio, draw a UML system sequence diagram (SSD) for the above use case showing all the messages involving the flow of activities and exception conditions.

> Follow the following steps for drawing the SSD:
> > **Step 1**: Identify input message
> > - See use case flow of activities or activity diagram
> >
> > **Step 2**: Describe the message from the external actor to the system using the message notation
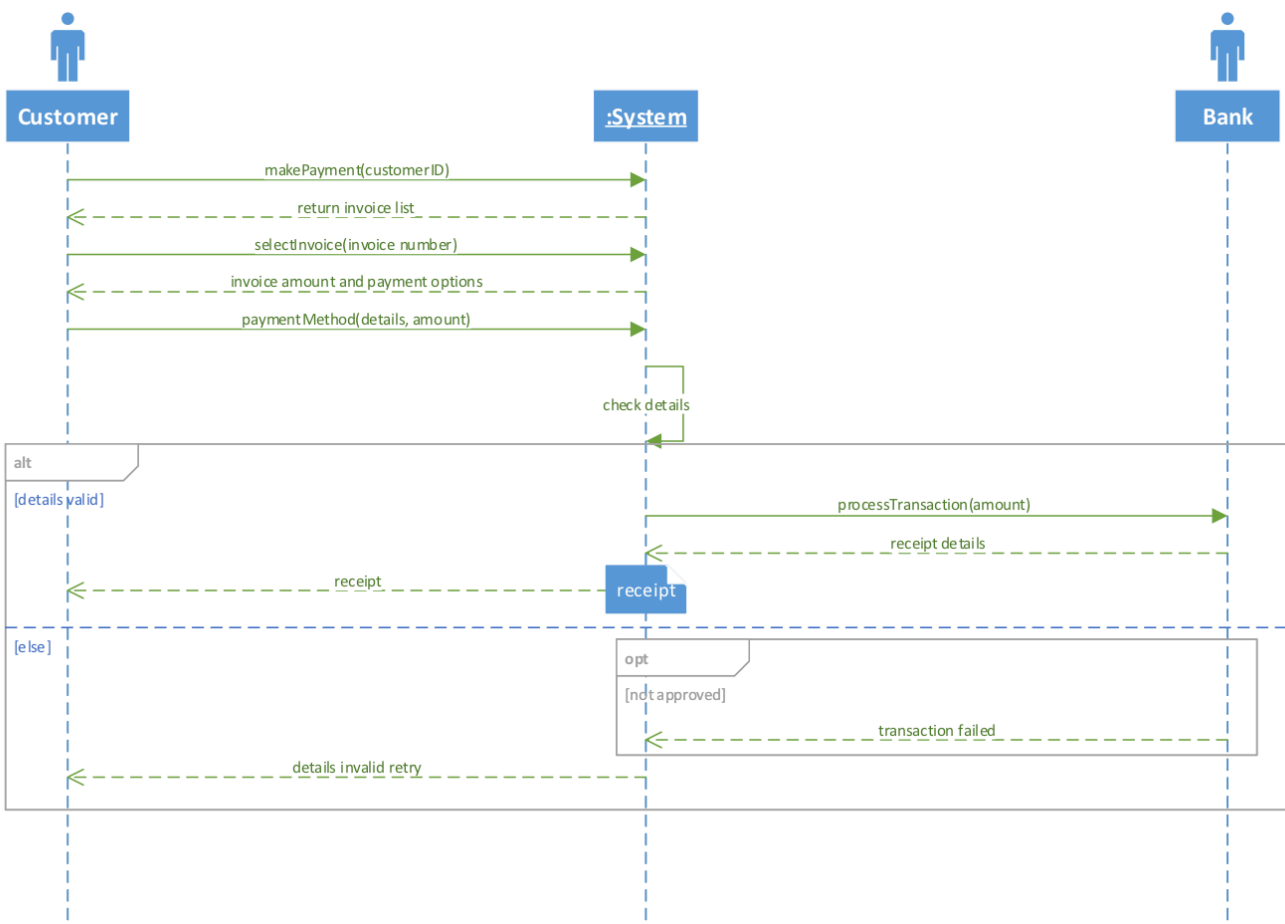> > - Name it verb-noun: what the system is asked to do
> > - Consider parameters the system will need
> >
> > **Step 3**: Identify any special conditions on input messages
> > - Iteration/loop frame
> > - Opt or Alt frame
> >
> > **Step 4**: Identify and add output return values:
> > - On message itself: aValue:= getValue(valueID)
> > - As explicit return on separate dashed line

4. Repeat tasks 2 to 3 for other use cases from the above use case diagram if time permits.