Case study: automatic teller machine

Case study 1 – Problem statement

This case study concerns a simplified system of the automatic teller machine (ATM). The ATM offers the following services:

Step 1 – Identifying the actors of the ATM

1.1 Identify the main actors of the ATM.

1.2Map out the static context diagram of the ATM.

Step 2 – Identifying use cases

1.3Prepare a preliminary list of use cases of the ATM, in order of actor.

Step 3 – Creating use case diagrams

1.4 Propose another, more sophisticated version of this preliminary use case diagram.

1.5 Complete the preliminary use case diagram by adding the secondary actors. To simplify matters, leave out the maintenance operator for the time being.

Step 4 – Textual description of use cases

1.6Describe the mandatory part of the *withdraw money using a visa card* use case.

1.7 Complete the description of the *withdraw money using a visa card* use case with the two optional paragraphs. Assume for instance that the new system must run on existing ATM hardware.

Step 5 – Graphical description of use cases

1.8 Create a system sequence diagram that describes the main success scenario of the *Withdraw money using a Visa card* use case.

1.9 Construct an activity diagram that describes the dynamics of the *withdraw money using a visa card* use case.

1.10 Expand the system sequence diagram that describes the nominal scenario of the *Withdraw money using a visa card* use case.

Step 6 – Organising the use cases

1.11 identify a part that the different use cases have in common and factorise it in a new case included in the former.

1.12 By extrapolating on the initial requirements, identify an extend relationship between two use cases of the bank customer.

1.13 Identify a generalisation relationship that involves two use cases of the bank customer.

1.14 Propose structuring the use cases of the ATM into packages. Once you have done that, then develop one use case diagram for each package.

Step 7 – Creating Class Diagrams

1.15 Identify and create individual class diagrams.

1.16 Identify and create the relational class diagrams.

Step 8 – Creating Sequence Diagrams

1.17 Create sequence diagrams.

Step 9 – Creating Statechart Diagrams

1.17 Create the required Statechart diagrams.