8.3 (7) Consider an online frequent flyer program. Some use cases are listed below. Prepare a use case diagram and include the appropriate relationships for the use cases.

- View credits. View the frequent flyer points currently available in the account.
- Submit missing credit. Request credit for an activity that was not credited.
- Change address. Submit a new mailing address.
- Change user name. Change the user name for the account.
- Change password. Change the password for the account.
- Book a free flight. Use frequent flyer credits to obtain a free flight.
- Book a free hotel. Use frequent flyer credits to obtain a free hotel.
- Book a free rental car. Use frequent flyer credits to obtain a free rental car.
- Request a frequent flyer credit card. Fill out an application for a credit card that gives frequent flyer points as a bonus for purchases.
- Check prices and routes. Find possible routings and corresponding prices for a paid flight.
- Check availability for a free flight. Check availability of free travel for a specified flight.

8.4 (8) Consider software that manages electronic music files. Some use cases are listed below. Prepare a use case diagram and include the appropriate relationships for the use cases.

- Play a song. Add the song to the end of the play queue.
- Play a library. Add the songs in the library to the play queue.
- Randomize order. Randomly reorder the songs in the play queue.
- Delete a song. Delete a song from a music library.
- Destroy a song. Delete a song from all music libraries and delete the underlying file.
- Add a song. Add a music file to a music library.
Exercises

- Create a music library. Create a new music library that contains no songs.
- Delete a music library. Delete the music library.
- Destroy a music library. Destroy all songs in the music library and then delete the music library.
- Rip a CD. Digitize the music on an analog CD.
- Create a CD. Burn an analog CD from a list of digital songs.
- View songs by title. Display the songs in a music library sorted by title.
- View songs by artist. Display the songs in a music library sorted by artist.
- View songs by album. Display the songs in a music library sorted by album.
- View songs by genre. Display the songs in a music library sorted by genre.
- Start play. Start playing songs from the queue. If previously stopped, resume playing from the last position, otherwise start playing at the start of the queue.
- Stop play. Suspend playing of music.

8.5 (8) Consider a simple payroll system. Prepare a use case diagram and include the appropriate relationships for the following use cases.

- Add deduction. Add another deduction type for the employee and incorporate the deduction in subsequent paychecks.
- Drop deduction. Remove the deduction type for the employee.
- Sum income. Total all income for a paycheck.
- Sum deductions. Total all deductions for a paycheck.
- Compute net take-home pay. Compute the total income less the total deductions for a paycheck.
- Compute charitable contributions. Total all contributions to charity for a paycheck.
- Compute taxes. Compute all taxes paid for a paycheck.
- Compute retirement savings. Compute all contributions to retirement funds for a paycheck.
- Compute other deductions. Compute the total of all deductions, other than charity, taxes, and retirement for a paycheck.
- Change employee name. Change the name of the employee that is on record.
- Change employee address. Change the mailing address of the employee that is on record.
- Compute base pay. Compute the base pay of the employee for the paycheck.
- Compute overtime pay. Compute the overtime pay of the employee for the paycheck.
- Compute other pay. Compute all other income (other than base pay and overtime) of the employee for the paycheck.
- Change method of payment. Change the method of disbursing the paycheck, such as cash, direct deposit, and check.

8.6 (4) Consider stock management software that records all transactions that occur for a portfolio. For example, stocks may be purchased and sold. Dividend payments may be received. Complex situations can occur, such as stock splits.

The current contents of a portfolio can be determined by replaying the transaction log. The portfolio has some initial contents, and all subsequent changes are captured via the transaction