MahiMarkets Java Coding Challenge

You are required to design/develop a cash dispensing application for use in an ATM or similar device. There is no need to request authorisation or availability of funds. The application should assume that all requests are legitimate; there will be other components of the system that will do things such as communicating with bank accounts and authorising withdrawals.

Mandatory Feature Set

The device will have a supply of cash (physical bank notes) available.
It must know how many of each type of bank note it has. It should be able to report back how much of each note it has.
It should be possible to tell it that it has so many of each type of note during initialisation. After initialisation, it is only possible to add or remove notes.
It must support $20 and $50 denominations.
It should be able to dispense legal combinations of notes. For example, a request for $100 can be satisfied by either five $20 notes or 2 $50 notes.
It is not required to present a list of options.
If a request can not be satisfied due to failure to find a suitable combination of notes, it should report an error condition in some fashion. For example, in an ATM with only $20 and $50 notes, it is not possible to dispense $30.
Dispensing money should reduce the amount of available cash in the machine.
Failure to dispense money due to an error should not reduce the amount of available cash in the machine.

For an ATM-style of machine (with $20 and $50 notes), the following dispensed amounts are of particular interest:

- $20
- $40
- $50
- $70
- $80
- $100
- $150
- $60
- $110
- $200, when there is only 3x$50 notes and 8x$20 notes available.

Optional Feature Set

Support all other legal denominations and coinage.
The controller should dispense combinations of cash that leave options open. For example, if it could serve up either 5 $20 notes or 2 $50 notes to satisfy a request for $100, but it only has 5 $20 notes left, it should serve the 2 $50 notes.
The controller needs to be able to inform other interested objects of activity. Threshold notification in particular is desirable, so that the ATM can be re-supplied before it runs out of cash.

Persistence of the controller is optional at this time. It can be kept in memory. However, it should go through a distinct initialisation period where it is told the current available amounts prior to being used.
Multi-currency support

Imagine you are writing this for inclusion in a production system. The code should be what you would be happy to hand over for release.
You can choose whichever build/development tools you're familiar with but you should include clear instructions on how to run and verify the final code.

Please also provide:
a) The thought processes you considered important while writing the code.
b) Optional features you would like to have implemented with additional time.