UML

Scenarios

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Scenarios

- a scenario is a specific sequence that illustrates behaviour
- a scenario is typically an instance of a use case: it is one path through the flow of events for the use case
- scenarios are developed to help in identifying the objects, the classes, and the object interactions needed to carry out a piece of the functionality specified by the use case

Scenarios

- scenarios document decisions about how the responsibilities specified in the use cases are distributed among the objects and classes in the system
- each use case is a web of scenarios - primary scenarios (the normal flow for the use case) and secondary scenarios (the more or less exceptional paths)

Scenarios

- the flow of events in each scenario is captured in text, a story telling what happens when going along the particular path
- to describe a use case several scenarios are needed
- scenarios can be described in UML as
  - sequence diagrams or
  - interaction diagrams

Sequence Diagrams

for Use Case Scenarios

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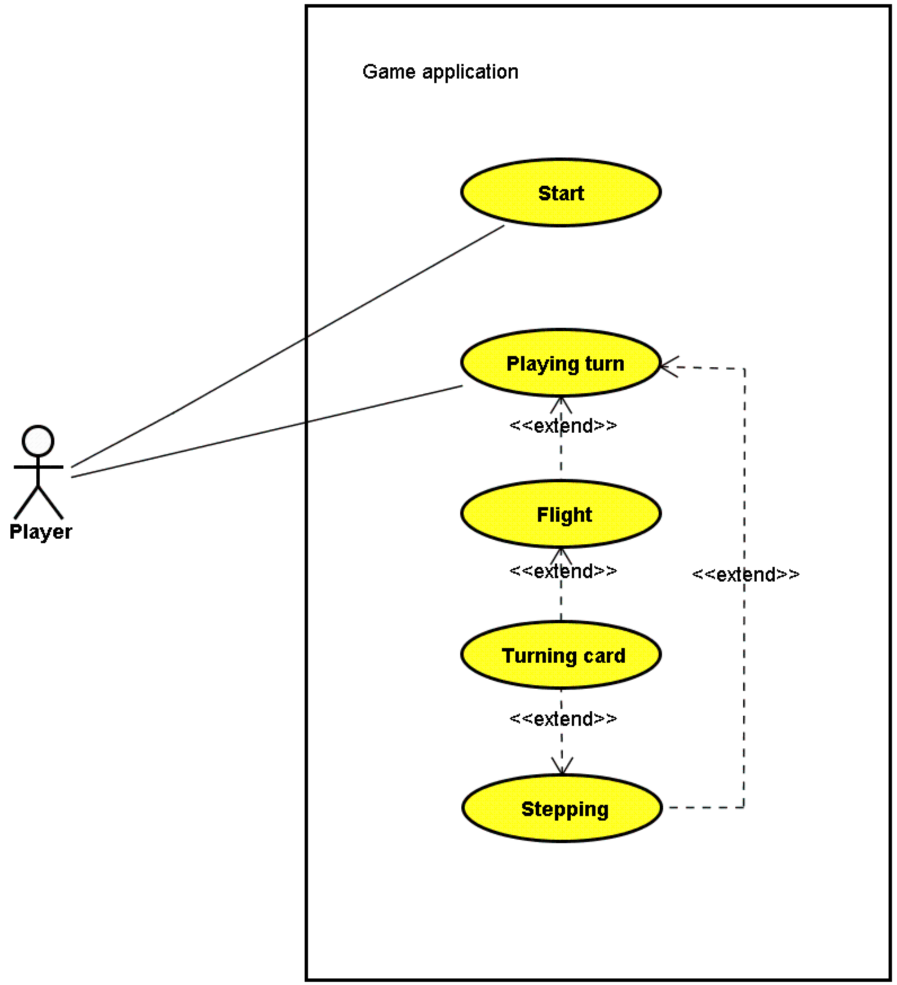
Sequence Diagrams

- a sequence diagram shows interactions arranged in time sequence
- the elements in a sequence diagrams are typically objects and messages exchanged between these objects
- the communicating elements can also be actors, systems, packages etc.

Sequence Diagrams

- sequence diagrams associated with use cases in the model of the system under development depict the objects and classes involved in a use case scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario

Use Case Diagram of ”African Star”



Use Case ”Stepping”

Name: Stepping Version: 1.0

Summary: Player uses a playing turn to move according to the die or tries to get a number that allows to turn a card.

Frequency: Most players do this on most rounds

Actors: Player

Preconditions: It is the player’s turn. The player has decided not to fly orhas no money.

Description: The player chooses between the two alternatives: 1. proceed stepping by land or 2. try to get a result allowing to turn the card in the place where the player is located. The player throws the die.

If the player has chosen alternative 1, the game application shows the result and the possible places where to move to. The player chooses one destination. The game application moves player’s piece to the new place. If there is a card in the destination and the player has money, the player is asked if she/he wishes to turn the card. If the player wishes to turn, this use case is extended by use case ”Turning card”.

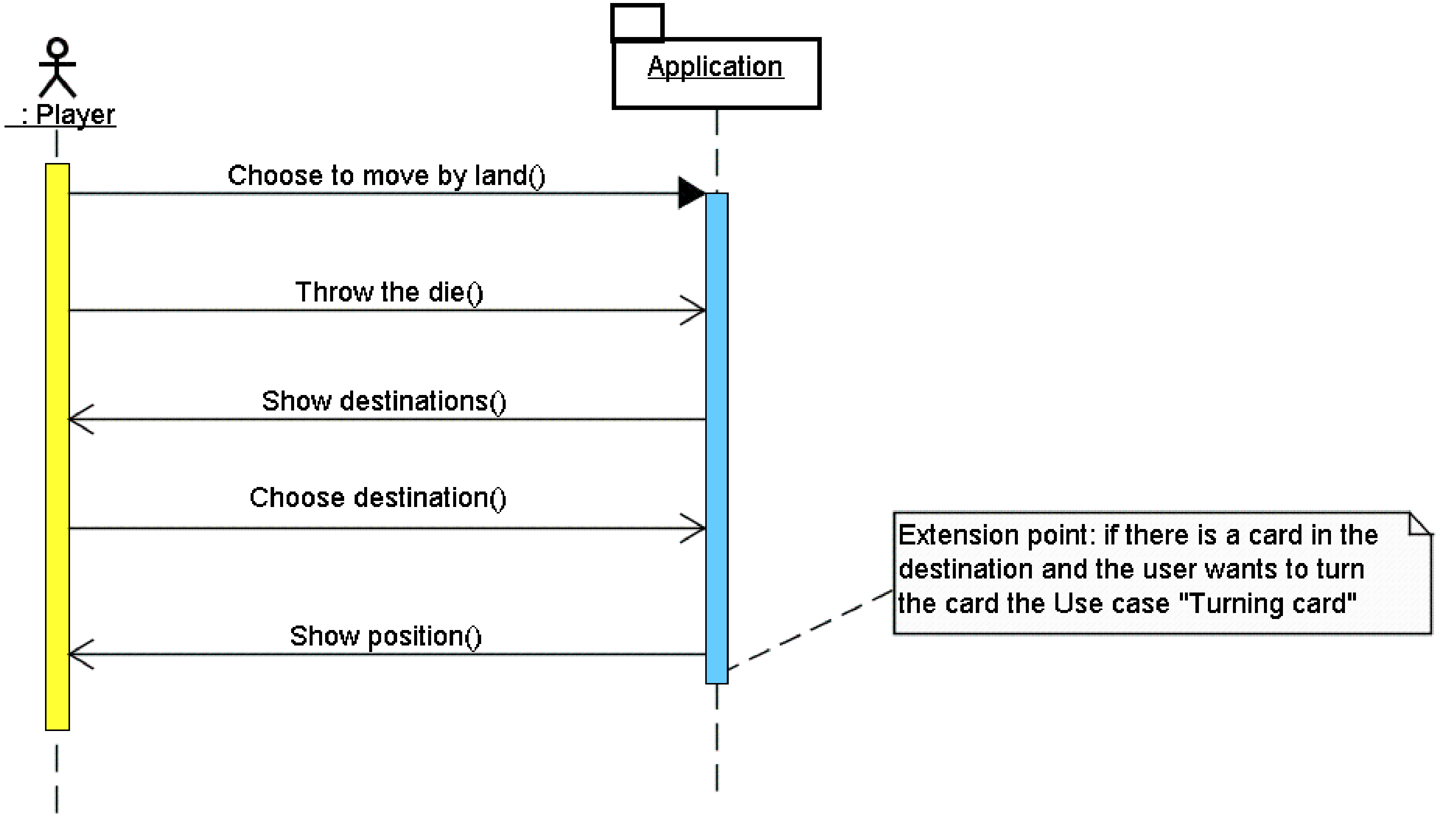
If the player has chosen alternative 2, and the result of throwing the die is 4, 5, or 6, this use case is extended by use case ”Turning card”.

Postconditions:

Exceptions:

Sequence Diagram for ”Stepping” (1)

Altenative 1: proceed by land



Extension point: if there is a card in the destination and the user wants to turn the card the Use case "Turning card"

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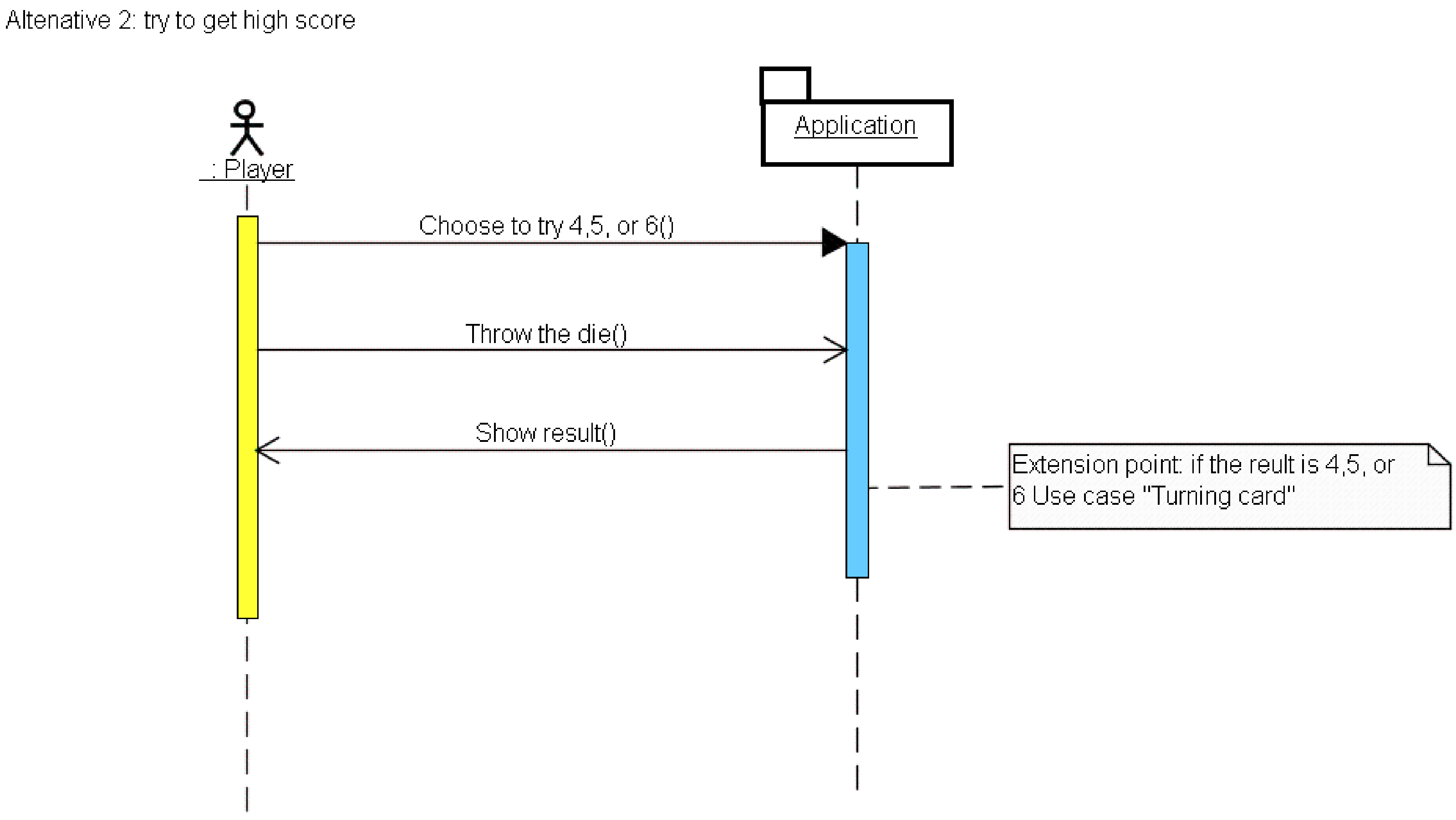
Sequence Diagram for ”Stepping” (2)


Altenative 2: try to get high score
: Player
Application
Choose to try 4,5, or 6()
Throw the die()
Show result()
Extension point: if the reult is 4,5, or 6 Use case "Turning card"

Activity Diagrams

for Use Cases

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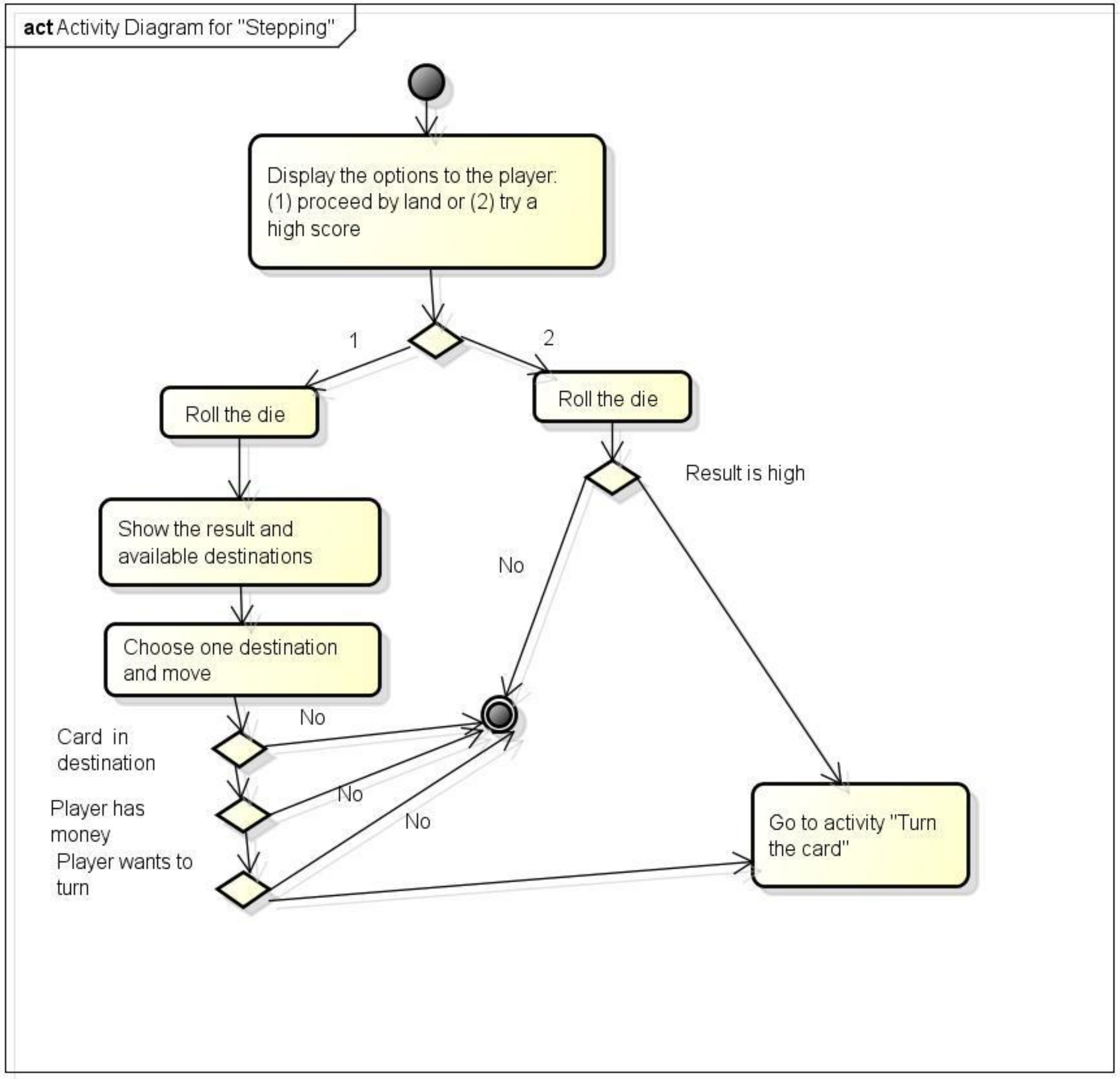
Activity Diagram

- represents a behavior that is composed of individual elements
- the behavior may be a specification of a use case
- it may also be a piece of functionality that can be reused in many places

Activity Diagram

- Can graphically represent the flow of events of a use case
- Shows the steps of a computation
  - Each step is a **state** of doing something
  - Execution steps are called **actions**
  - Depicts which steps are executed in sequence and which can be executed concurrently
  - Control flow – the flow of control from one action to the next
  - Resembles a traditional flow chart, but also parallel actions are possible

Activity diagram for use case ”Stepping”


act Activity Diagram for "Stepping"
Display the options to the player: (1) proceed by land or (2) try a high score
1
2
Roll the die
Roll the die
Show the result and available destinations
Result is high
No
Choose one destination and move
No
Card in destination
No
Player has money
No
Player wants to turn
Go to activity "Turn the card"