Data Dictionary

Data flow designation: Scenario Commencement Specifications

Data flow description: This is the information received in form format from the professor setting up a scenario

**Data flow elements:**

* 1. Grid dimensions - integer values signifying grid size
  2. Has oil – Yes/no value if the parcel of land has oil
  3. Oil depth – if the parcel of land has oil, this is the integer value of that depth
  4. Grid no – integer uniquely identifying that grid square
  5. Minimum bid - an integer value signifying the minimum bid on any piece of land during the scenario
  6. Starting money – an integer value signifying the beginning amount of money for each player
  7. Rock compositions and depth – an alphanumeric code signifying a special rock formation and the depths of that said formation
  8. Participant – an alpha numeric code signifying a participant in the scenario
  9. Round time – an integer signifying round times

**Data flow data structures:**

* 1. Grid – a two dimensional array of Grid info arrays
  2. Grid info – an array containing the elements: has Oil, Oil depth, and an array Rock composition and depths
  3. Rock compositions and depth array – an array containing rock composition and depth elements
  4. Participants array – an array containing participant elements

Data flow designation: Initial Scenario

Data flow description: This is the information sent from the build scenario process into the Initial scenario Information data-store

**Data flow elements:**

* 1. Grid dimensions - integer values signifying grid size
  2. Has oil – Yes/no value if the parcel of land has oil
  3. Oil depth – if the parcel of land has oil, this is the integer value of that depth
  4. Grid no – integer uniquely identifying that grid square
  5. Minimum bid - an integer value signifying the minimum bid on any piece of land during the scenario
  6. Starting money – an integer value signifying the beginning amount of money for each player
  7. Rock compositions and depth – an alphanumeric code signifying a special rock formation and the depths of that said formation
  8. Participant – an alpha numeric code signifying a participant in the scenario
  9. Round time – an integer signifying round times

**Data flow data structures:**

* 1. Grid – a two dimensional array of Grid info arrays
  2. Grid info – an array containing the elements: has Oil, Oil depth, and an array Rock composition and depths
  3. Rock compositions and depth array – an array containing rock composition and depth elements
  4. Participants array – an array containing participant elements

Data flow designation: Initial conditions

Data flow description: This is the data going from the initial scenario information data-store to the start simulation process

**Data flow elements:**

* 1. Grid dimensions - integer values signifying grid size
  2. Has oil – Yes/no value if the parcel of land has oil
  3. Oil depth – if the parcel of land has oil, this is the integer value of that depth
  4. Grid no – integer uniquely identifying that grid square
  5. Minimum bid - an integer value signifying the minimum bid on any piece of land during the scenario
  6. Starting money – an integer value signifying the beginning amount of money for each player
  7. Rock compositions and depth – an alphanumeric code signifying a special rock formation and the depths of that said formation
  8. Participant – an alpha numeric code signifying a participant in the scenario
  9. Round time – an integer signifying round times

**Data flow data structures:**

* 1. Grid – a two dimensional array of Grid info arrays
  2. Grid info – an array containing the elements: has Oil, Oil depth, and an array Rock composition and depths
  3. Rock compositions and depth array – an array containing rock composition and depth elements
  4. Participants array – an array containing participant elements

Data flow designation: Scenario conditions

Data flow description: This is the dataflow of information that goes from the start simulation process into the Current Scenario information data-store, and this information becomes non-static, and able to change between rounds

**Data flow elements:**

* 1. Grid dimensions - integer values signifying grid size
  2. Has oil – Yes/no value if the parcel of land has oil
  3. Oil depth – if the parcel of land has oil, this is the integer value of that depth
  4. Grid no – integer uniquely identifying that grid square
  5. Minimum bid - an integer value signifying the minimum bid on any piece of land during the scenario
  6. Starting money – an integer value signifying the beginning amount of money for each player
  7. Rock compositions and depth – an alphanumeric code signifying a special rock formation and the depths of that said formation
  8. Participant – an alpha numeric code signifying a participant in the scenario
  9. Round time – an integer signifying round times

**Data flow data structures:**

* 1. Grid – a two dimensional array of Grid info arrays
  2. Grid info – an array containing the elements: grid no, has Oil, Oil depth, and an array Rock composition and depths
  3. Rock compositions and depth array – an array containing rock composition and depth elements
  4. Participants array – an array containing participant elements

Data flow designation: Current conditions

Data flow description: Data flow that goes from Current Scenario Information to Generate constraints and send conditions processes containing conditions by the non-player specific elements that have an effect on actions able to be taken

**Data flow elements:**

* 1. Round number – integer signifying which round it is
  2. Grid no – integer uniquely identifying that grid square
  3. Drill – integer signifying the depth drilled on a grid square, starts at 0

**Data flow data structures:**

1. Owned property – an array of grid no elements and drill elements

Data flow designation: Participant constraints

Data flow description: Dataflow going from generate constraints process, to the constraint repository data store. This is computed from the Current participant information generating conditions by player specific elements that have an effect on actions able to be taken

**Data flow elements:**

1. Participant ID – integer uniquely identifying a participant
2. Current money – integer value of the participant’s money
3. Bid check – integer value for the sum of all bids

**Data flow data structures:**

Data flow designation: Scenario constraints

Data flow description: Dataflow going from generate constraints process, to the constraint repository data store. This is computed from the Current conditions data generating conditions by non-player specific elements that have an effect on actions able to be taken

**Data flow elements:**

* 1. Grid no – integer uniquely identifying that grid square
  2. Drill – integer signifying the depth drilled on a grid square, starts at 0

**Data flow data structures:**

* 1. Illegal squares – array containing the Grid no elements of squares already owned
  2. Drilled squares – an array containing the drill element of all squares with a value greater than 0

Data flow designation: Constraints

Data flow description: Dataflow going from the Constraint Repository data store, to the error prevention process. This is a merging of all constraints that can effect an action taken by a player.

**Data flow elements:**

* 1. Grid no – integer uniquely identifying that grid square
  2. Drill – integer signifying the depth drilled on a grid square, starts at 0
  3. Participant ID – integer uniquely identifying a participant
  4. Current money – integer value of the participant’s money
  5. Bid check – integer value for the sum of all bids

**Data flow data structures:**

1. Illegal squares – array containing the Grid no elements of squares already owned
2. Drilled squares – an array containing the drill element of all squares with a value greater than 0

Data flow designation: Commands

Data flow description: Information from participant from form sent to the error prevention process

**Data flow elements:**

1. Participant ID – integer uniquely identifying a participant
2. Bid –element that contains a Grid no and a dollar amount
3. Drill command – element containing a Grid no and a drill depth
4. Seismic line – element containing a grid no and an integer representing which line on the grid for inspection

**Data flow data structures:**

Data flow designation: Approved commands

Data flow description: Dataflow from the error prevention process to the Process round commands process. These contain only the commands that were deemed legal and approved

**Data flow elements:**

1. Participant ID – integer uniquely identifying a participant
2. Bid –element that contains a Grid no and a dollar amount
3. Drill command – element containing a Grid no and a drill depth
4. Seismic line – element containing a grid no and an integer representing which line on the grid for inspection

**Data flow data structures:**

Data flow designation: End of round participant conditions

Data flow description: This is the dataflow from the process round commands to participant information. This contains the changed statistic for a participant after their approved commands have been carried out.

**Data flow elements:**

1. Grid no – integer uniquely identifying that grid square
2. Income – integer value of the increase in finances for a participant
3. Drill info – element that contains a grid no and alpha numeric info on the rock formations contained within it
4. Seismic line info – element that contains a grid no and alpha numeric info on the rock formation discovered about those grid lines

**Data flow data structures:**

1. Bid wins – array containing the grid no of the bids won
2. Bid losses – array containing the grid no of the bids lost
3. Drill info array – array of drill info elements
4. Seismic line info array – array of seismic line info elements
5. Owned land – array containing grid no’s of the land owned by a participant

Data flow designation: Participant information

Data flow description: Data flow going from the Build scenario process to the participant information data store

**Data flow elements:**

1. Participant ID – integer uniquely identifying a participant
2. Initial money – inter representing starting money

**Data flow data structures:**

1. Starting info – an array of Grid no elements and the topsoil type on that grid

Data flow designation: Current participant information

Data flow description: Dataflow that goes from the participant information data store to the end simulation process

**Data flow elements:**

1. Participant ID – integer uniquely identifying a participant
2. Current money – integer representing money of the participant
3. Income – integer value of the increase in finances for a participant

**Data flow data structures:**

1. Owned land – array containing grid no’s of the land owned by a participant
2. Drilled land – an array containing the owned land of a participant and the depth drilled

Data flow designation: Current participant conditions

Data flow description: Dataflow from participant information data store to generate constraints process

**Data flow elements:**

1. Current money – integer representing money of the participant

**Data flow data structures:**

1. Drilled land – an array containing the owned land of a participant and the depth drilled
2. Owned land – array containing grid no’s of the land owned by a participant

Data flow designation: Final statistics

Data flow description: Displays to the player the final game statistics

**Data flow elements:**

1. Participant ID – integer uniquely identifying a participant
2. Current money – integer representing money of the participant
3. Income – integer value of the increase in finances for a participant

**Data flow data structures:**

1. Statistics array – array of player stats elements
2. Player stats array – an array containing participant id, drilled land, current money, owned land and income data
3. Drilled land – an array containing the owned land of a participant and the depth drilled
4. Owned land – array containing grid no’s of the land owned by a participant

Data flow designation: Final results

Data flow description: Dataflow flowing from evaluation process to simulation results/rank data store containing a list of the top 5 winners and their playerstats

**Data flow elements:**

1. Participant ID – integer uniquely identifying a participant
2. Current money – integer representing money of the participant
3. Income – integer value of the increase in finances for a participant

**Data flow data structures:**

1. Winners array – an ordered list of player stats arrays from first to fifth in winning order
2. Player stats array – an array containing participant ID, drilled land, current money, owned land and income data
3. Drilled land – an array containing the owned land of a participant and the depth drilled
4. Owned land – array containing grid no’s of the land owned by a participant

# Initial Scenario Information

Contains all information for the beginning of the scenario, especially grid size, oil locations, and soil data for all grids. (this information is static and unchanging) Along with this would be starting money of each player and minimum bid on any piece of land in the scenario

# Participant Information

This contains the information unique to the participant, including their information on pieces of land, their income per turn, their owned land, their current money supply and the location and depth of drilling

# Current Scenario

Upon setting up the scenario this data store contains all of the starting information, including all information about grid size, oil locations and soil data, and minimum bid on any piece of land, and the starting money for each player. This information will then stay static.

Also, this contains the information pertinent to the current running of the scenario that changes. This consists of which pieces of land have been purchased and what round it is.

# Constraint repository

A temporary data store. Contains all constraints upon which any command could have. This includes the scenario constraints such as, the owned land and the drill depths on any piece of land, along with a participant’s current money, and how much they have bid on all pieces of land. This information is used to determine whether or not a command is legal and possible.

# Simulation Results/Rank

This data store contains the information at the end of the Simulation/Scenario and is presented to all groups to show the statistics of the top 5 participants