SERVER-CLIENT

Memory for Server-Client practicum

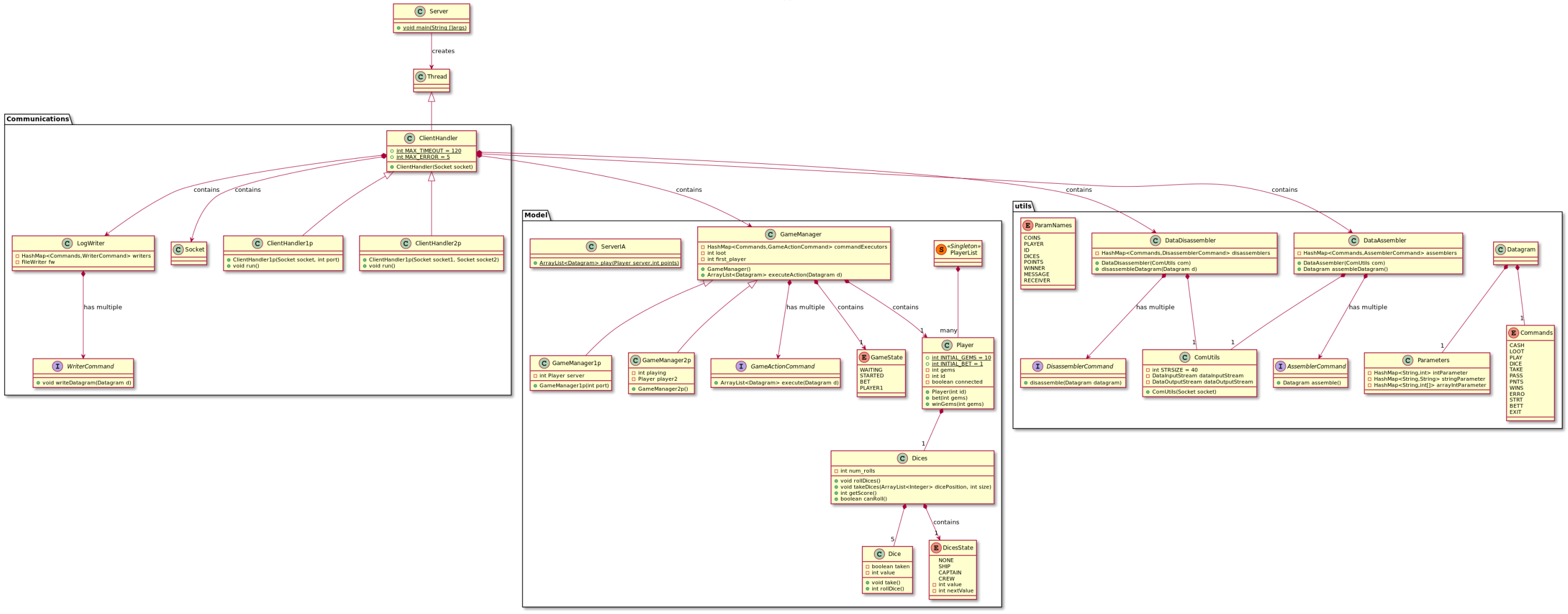
Manuel Lecha & Oriol Rabasseda

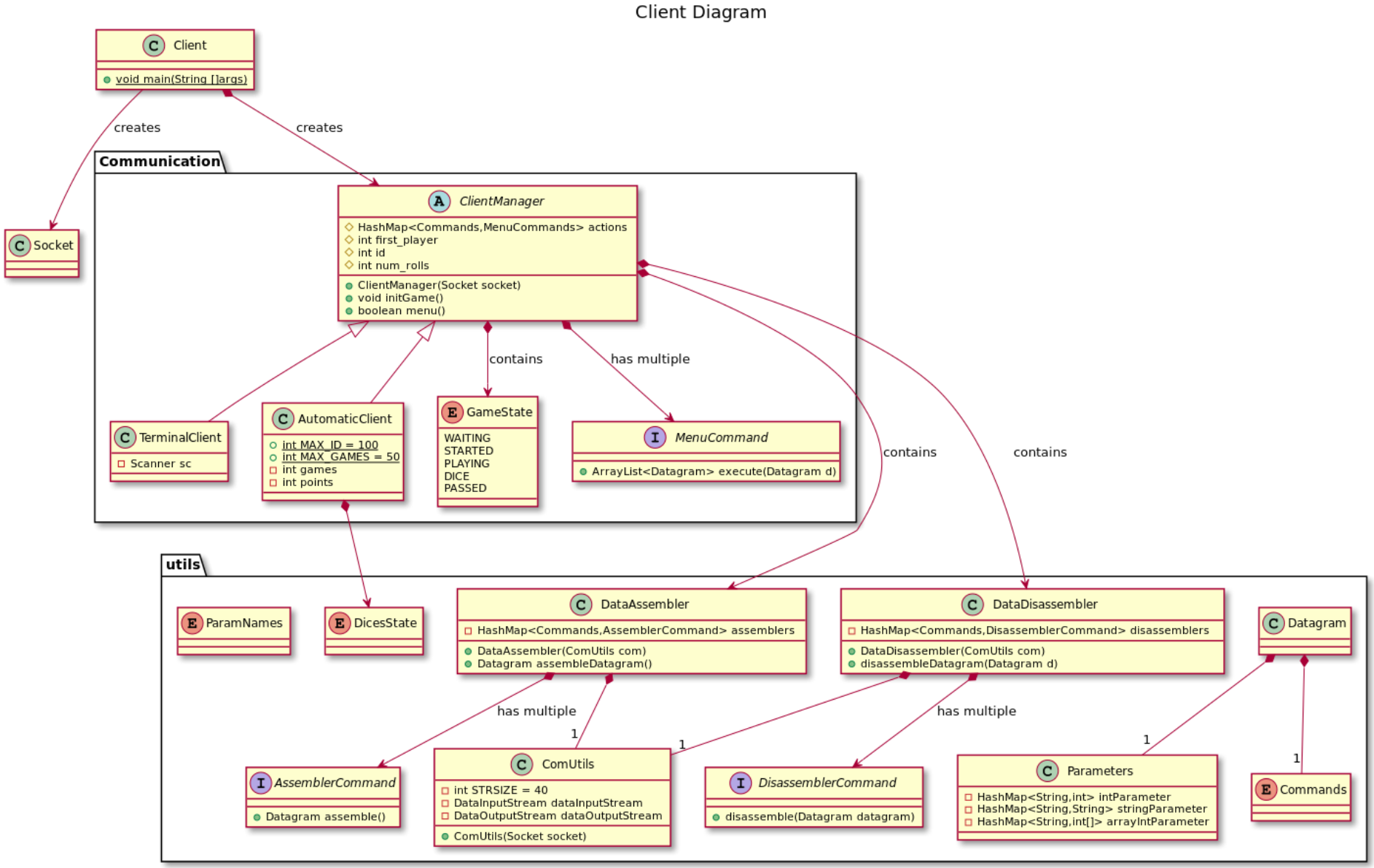
Main program decisions

1. For 1-player games and client, the read timeout to avoid deadlocks are 1 minute. In 2-player games, the timeout is set to 500 ms and we treat it by adding the number of timeout exceptions one of the players raise until they have sum 120 exceptions (1 minute)
2. Selector pattern: every time there is set of actions that depend on a command, we use a selector pattern implementation based on a HashMap where the key is a command and the value is a class. This class implements an interface (same interface for all handlers).
3. Error treatment: when an error is sent either by the server or client, we close the stream
4. To avoid creating one class for every type of datagram (command), we implemented a HashMap containing the parameters where the key is a specific identifier for every conceptual type of parameter. Additionally, we need 3 types of HashMaps to cover every type of parameter (but they aren't instanced if it is not necessary)
5. We have a list of players, so while the server is up, the same ID preserves its cash even if the client disconnects. We need to treat connection of players so a player cannot be connected for more than one client at a time
6. We have designed a wide set of exceptions so every possible exception inside the program is treated differently

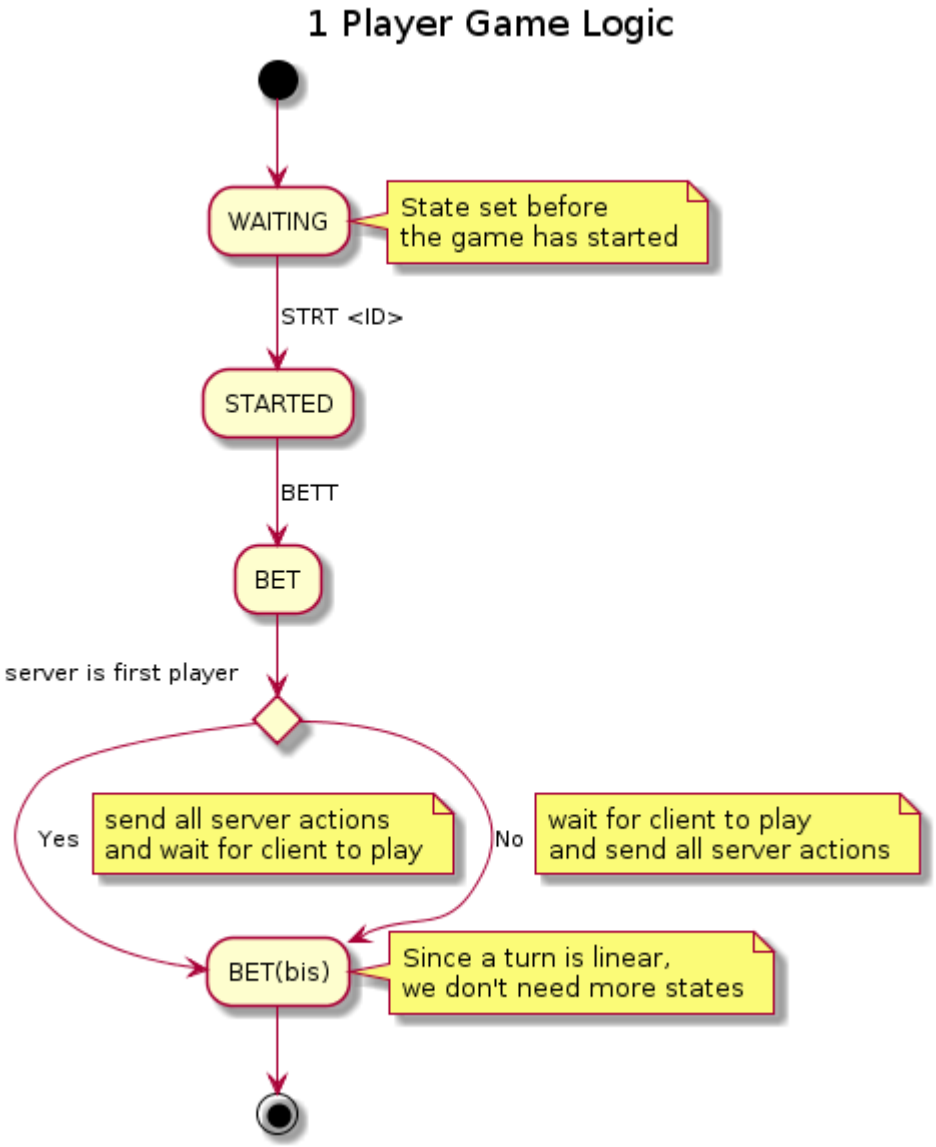
Class diagrams

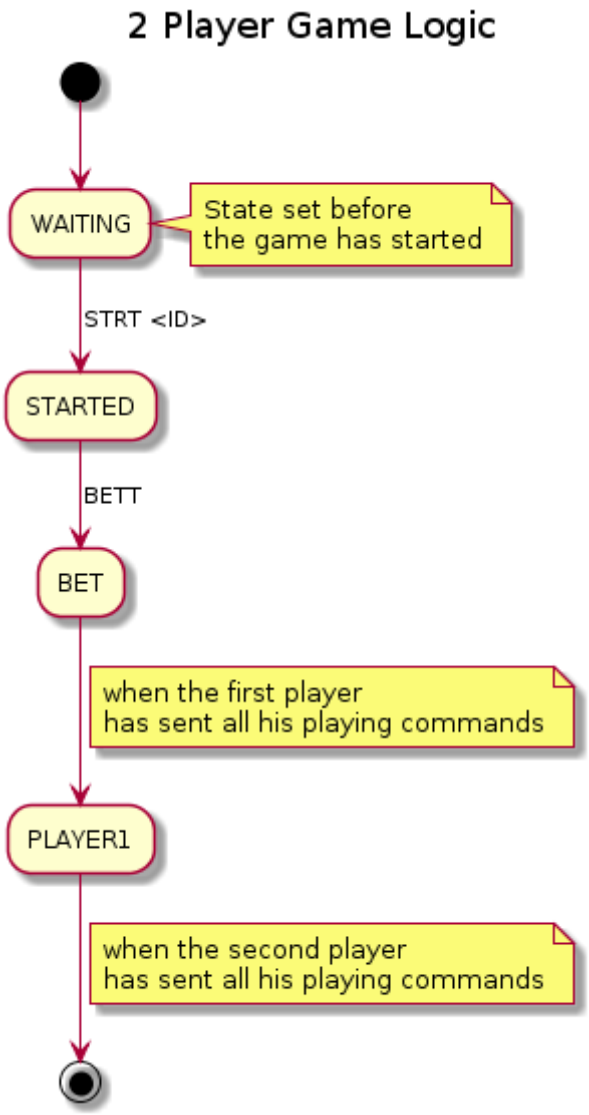
Server Application

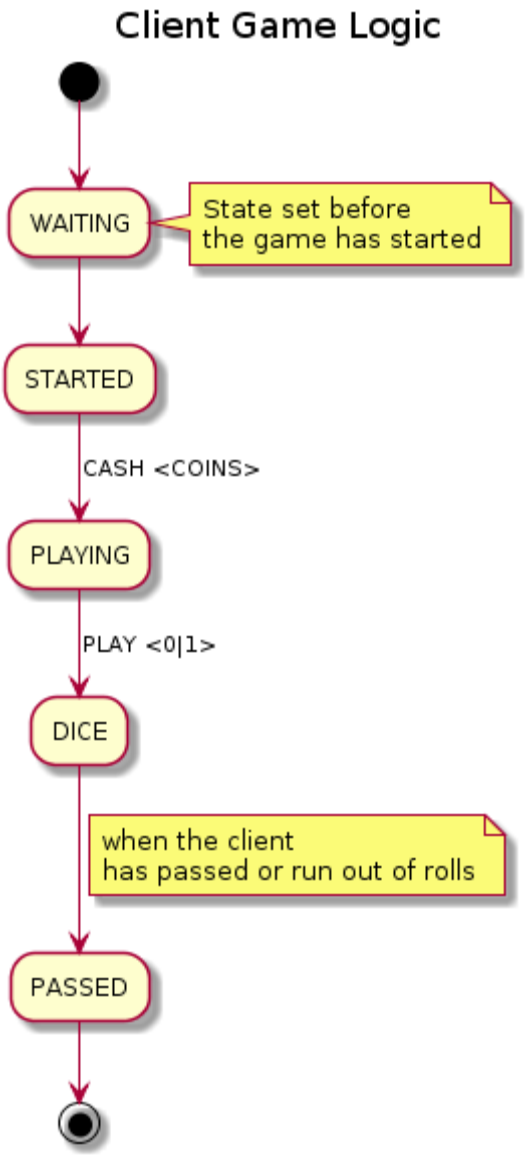



Client Diagram
Client
void main(String []args)
creates
creates
Socket
Communication
ClientManager
HashMap<Commands,MenuCommands> actions
int first_player
int id
int num_rolls
ClientManager(Socket socket)
void initGame()
boolean menu()
contains
has multiple
TerminalClient
Scanner sc
AutomaticClient
int MAX_ID = 100
int MAX_GAMES = 50
int games
int points
GameState
WAITING
STARTED
PLAYING
DICE
PASSED
MenuCommand
ArrayList<Datagram> execute(Datagram d)
contains
contains
utils
ParamNames
DicesState
DataAssembler
HashMap<Commands,AssemblerCommand> assemblers
DataAssembler(ComUtils com)
Datagram assembleDatagram()
DataDisassembler
HashMap<Commands,DisassemblerCommand> disassemblers
DataDisassembler(ComUtils com)
disassembleDatagram(Datagram d)
Datagram
has multiple
1
1
has multiple
AssemblerCommand
Datagram assemble()
ComUtils
int STRSIZE = 40
DataInputStream dataInputStream
DataOutputStream dataOutputStream
ComUtils(Socket socket)
DisassemblerCommand
disassemble(Datagram datagram)
1
Parameters
HashMap<String,int> intParameter
HashMap<String,String> stringParameter
HashMap<String,int[]> arrayIntParameter
1
Commands

Flow diagrams




2 Player Game Logic
WAITING
State set before
the game has started
STRT <ID>
STARTED
BETT
BET
when the first player
has sent all his playing commands
PLAYER1
when the second player
has sent all his playing commands


Client Game Logic
WAITING
State set before
the game has started
STARTED
CASH <COINS>
PLAYING
PLAY <0|1>
DICE
when the client
has passed or run out of rolls
PASSED