

```

/* *****
 *   PlayerRunner.java
 *   Generic Player Main Methods
 * *****/
package player;

import player.PlayerI.*;
import player.playeragent.*;
import edu.neu.ccs.demeterf.demfgen.lib.List;
import edu.neu.ccs.demeterf.demfgen.lib.List.Pred;
import gen.*;

/** Takes the Player's Turn */
public class PlayerRunner{
    private Player player;
    private PlayerI genericPlayer;

    public PlayerRunner(String pid, PlayerI play){
        genericPlayer = play;
        player = new Player(new PlayerID(Integer.parseInt(pid)), play.getName());
    }

    /** Forwarded from Static to Dynamic */
    public void main(){
        List<Transaction> trans =
            buyOrReofferDerivative()
                .append(createDerivative())
                .append(deliverRawMaterial())
                .append(finishProduct()));

        Util.commitTransaction(new PlayerTransaction(player,trans));
    }

    /** This one shouldn't need to be changed */
    public ReofferAgent getReofferAgent(){ return new ReofferAgent(); }

    /** Wrap a Derivative into a Transaction of the given TransactionType */
    private class TransWrap extends List.Map<Derivative, Transaction>{
        private TransactionType type;
        public TransWrap(TransactionType t){ type = t; }
        public Transaction map(Derivative d){ return new Transaction(type, d); }
    }

    /** Creates a derivative */
    private List<Transaction> createDerivative(){
        Derivative der = genericPlayer.getCreateAgent().createDerivative(player, Util.existingTypes());

        return List.create(new Transaction(new Create(), der));
    }

    /** Buys a derivative from the sale stores or reoffers all of them */
    private List<Transaction> buyOrReofferDerivative(){
        List<Derivative> forSale = Util.forSale();
        if(forSale.isEmpty())return List.create();

        // Filter out Derivatives that we are selling
        forSale = forSale.filterout(new Pred<Derivative>() {
            public boolean huh(Derivative d) { return d.seller.equals(player.id); }
        });

        double account = Util.getAccount(player);
        List<Derivative> bought = genericPlayer.getBuyAgent().buyDerivatives(forSale, account);

        if(!bought.isEmpty())
            return bought.map(new TransWrap(new Buy()));
        return reofferAll(forSale, player.id);
    }

    /** Returns a list of reoffered derivatives */
    private List<Transaction> reofferAll(List<Derivative> forSale, PlayerID pid) {
        return Util.uniquelyTyped(forSale).map(new PriceReducer(getReofferAgent(), pid));
    }

    /** Reduces an individual Derivative using the ReofferAgent */
    private class PriceReducer extends List.Map<Derivative,Transaction >{
        ReofferAgent agent;
        PlayerID pid;
        PriceReducer(ReofferAgent a, PlayerID p){ pid = p; agent = a; }

        public Transaction map(Derivative d){
            return new Transaction(new Reoffer(), agent.reofferDerivative(d, pid)); }
    }

```

```

}

/** Delivers raw material for the derivatives that need raw material */
private List<Transaction> deliverRawMaterial(){
    List<Derivative> needRM = Util.needRawMaterial(player);
    return needRM.map(new Deliverer(genericPlayer.getDeliverAgent()));
}

/** Handles the calling of DeliverAgent */
private class Deliverer extends List.Map<Derivative, Transaction>{
    DeliverAgentI agent;
    Deliverer(DeliverAgentI a){ agent = a; }
    /** Call the DeliverAgent, and Wrap the Transaction */
    public Transaction map(Derivative d){
        return new Transaction(new Deliver(), agent.deliverRawMaterial(d));
    }
}

/** Finishes the derivatives that need finishing */
private List<Transaction> finishProduct(){
    List<Derivative> toFinish = Util.toBeFinished(player);
    return toFinish.map(new Finisher(genericPlayer.getFinishAgent()));
}

/** Handles the calling of FinishAgent */
private class Finisher extends List.Map<Derivative, Transaction>{
    FinishAgentI agent;
    Finisher(FinishAgentI a){ agent = a; }
    /** Call the FinishAgent, and Wrap the Transaction */
    public Transaction map(Derivative d){
        return new Transaction(new Finish(), d.finish(agent.finishDerivative(d)));
    }
}
}

```