

고급소프트웨어공학

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MODULE coin

```
MODULE coin(status, insertCoin) //status, insertCoin을 인자로 받기
VAR money:0..99999999; //money 변수선언
    state:{readyCoin, requestCoin}; //상태 값 선언 : readyCoin, requestCoin
    action:{insertCoin, changeCoin, changeRefund};
    //액션 값 선언 : insertCoin, changeCoin, changeRefund
ASSIGN
    init(money) := 0; //init money value
    next(money) := money+insertCoin; //next money는 들어오는 값 합계
```

MODULE water

MODULE water(status, insertWater) //status, insertWater 인자로 받기

VAR watercnt: 0..9999; //변수선언

state:{readyWater, requestWater}; //상태값 선언

action:{insertWater}; //액션값 선언

ASSIGN

init(watercnt) := 0; //count 선언

next(watercnt) := watercnt + insertWater; //인자값 더하기

MODULE coffee

MODULE coffee(status, insertCoffee) //커피 모듈 선언

VAR coffeecnt: 0..9999;

state:{readyCoffee, requestCoffee};

action:{insertCoffee};

ASSIGN

init(coffeeCnt) := 0;

next(coffeeCnt) := coffeecnt + insertCoffee;

MODULE cup

```
MODULE cup(status, insertCup)
```

```
VAR cupcnt: 0..9999;
```

```
  state:{readyCup, requestCup};
```

```
  action:{insertCup};
```

```
ASSIGN
```

```
  init(cupcnt) := 0;
```

```
  next(cupcnt) := cupcnt + insertCup;
```

MODULE main

MODULE main //메인

VAR //변수선언

remainCoin: coin;

coinsum: 0..999999;

remainCoffee: coffee;

coffeesum: 0..9999;

remainMilk: milk;

milksum: 0..9999;

remainCup: cup;

cupsum: 0..9999;

state: {PowerOff, PowerOn, InitDisplay, FullCoin, FullWater, FullCoffee, FullCup,
ReadyForProduct, OtherError, MenuOn, GetProduct, ChangeCoin, RefundCoin};

//상태값 선언

action: {TurnOn, CheckWater, CheckCoffee, CheckCup, InsertCoin, ChooseMenu,
ReturnCoin, DisplayError, None};

//액션 값 선언

MODULE main – con'td

ASSIGN

```
coinsum := remainCoin.money;
coffeesum := remainCoffee.coffeeCnt;
milksum := remainMilk.milkCnt;
cupsum := remainCup.cupCnt;
init(state) := PowerOff;
next(state) := case
    state = PowerOff & action = TurnOn           : PowerOn;
    state = PowerOn & action = CheckCup           : FullCup;
    state = PowerOn & action = CheckWater         : FullWater;
    state = PowerOn & action = CheckCoffee        : FullCoffee;
    state = ReadyForProduct & action = InsertCoin : MenuOn;
    state = MenuOn & action = ChooseMenu          : GetProduct;
    state = GetProduct & action = ReturnCoin      : ChangeCoin;
    state = MenuOn & action = ReturnCoin          : RefundCoin;
    TRUE : state;
esac;
```

//상태 및 액션 값 정의

MODULE main – cont'd

```
LTLSPEC ( G (( (state = PowerOff -> F action = TurnOn) &
                (state = PowerOn -> F action = CheckCup) &
                (state = PowerOn -> F action = CheckWater) &
                (state = PowerOn -> F action = CheckCoffee) &

                (state = InsertCoin -> F(state = MenuOn & action = ChooseMenu))) &
                (state = GetProduct -> F(action = ReturnCoin))) ->
F (G state = PowerOn));
```

//스펙 정의