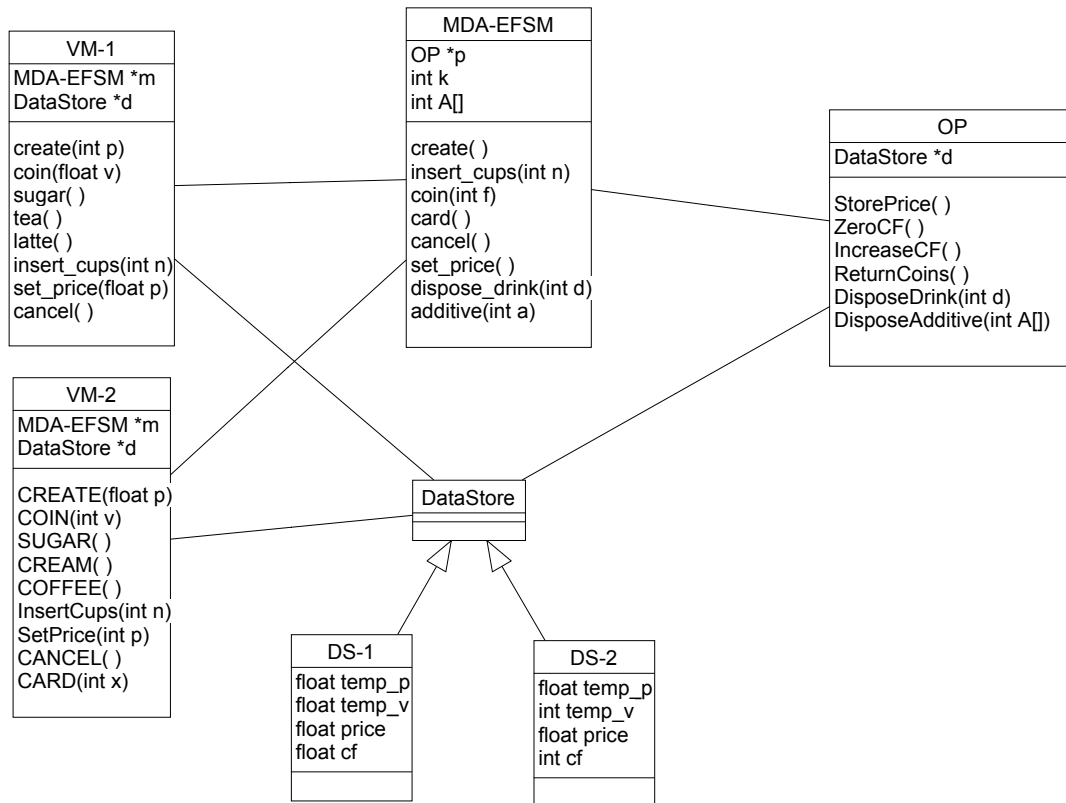


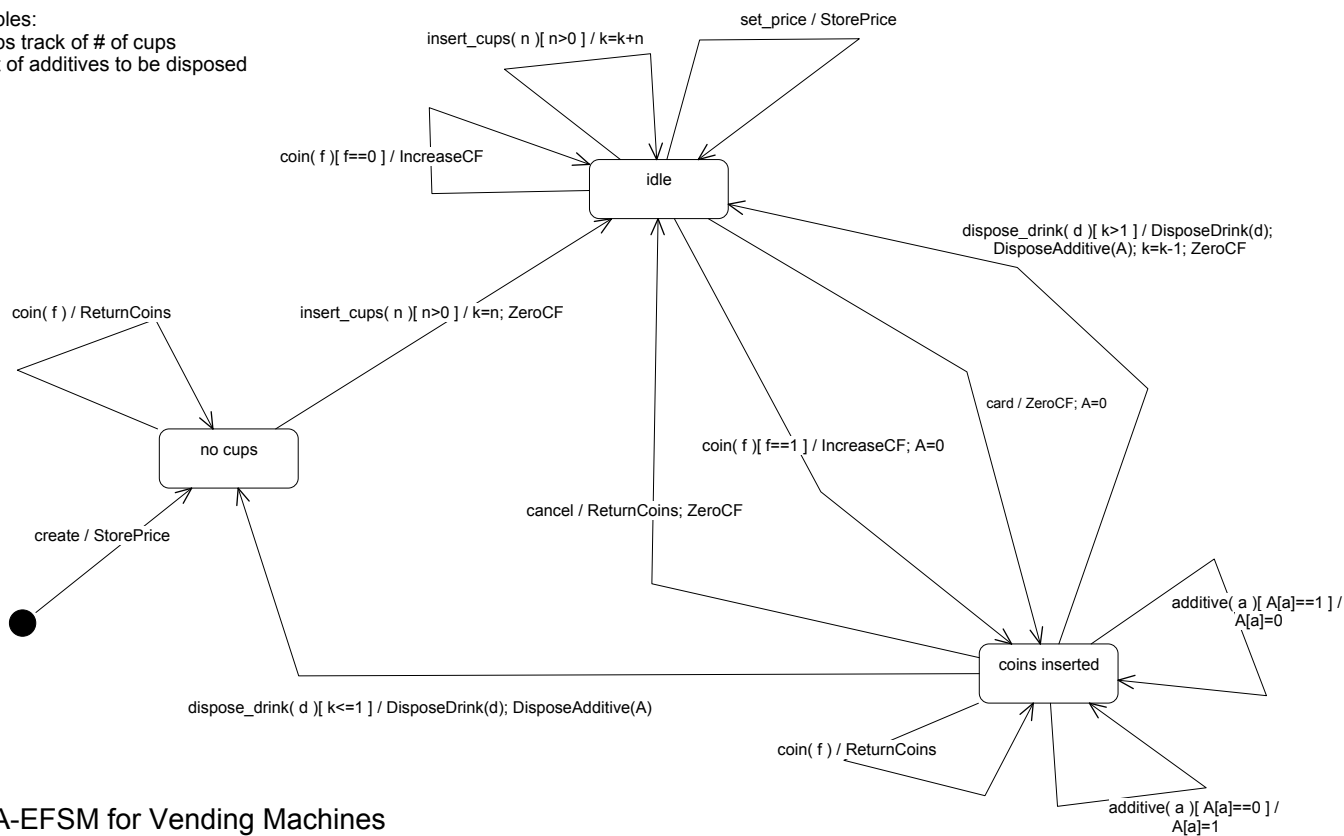
CS 586 - Spring 2023
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Project - Part 2

1 - MDA-EFSM model for the VM components



Internal Variables:
 int k // keeps track of # of cups
 int A[] // a list of additives to be disposed



Sample MDA-EFSM for Vending Machines

MDA-EFSM Events:

1. create()
2. insert_cups(int n) // *n* represents # of cups
3. coin(int f) // f=1: sufficient funds inserted for a drink
 // f=0: not sufficient funds for a drink
4. card()
5. cancel()
6. set_price()
7. dispose_drink(int d) // *d* represents a drink *id*
8. additive(int a) // *a* represents additive *id*

MDA-EFSM Actions:

1. StorePrice()
2. ZeroCF() // zero Cumulative Fund *cf*
3. IncreaseCF() // increase Cumulative Fund *cf*
4. ReturnCoins() // return coins inserted for a drink
5. DisposeDrink(int d) // dispose a drink with *d id*
6. DisposeAdditive(int A[]) // dispose marked additives in *A* list,
 // where additive with *i id* is disposed when $A[i]=1$

Vending-Machine-1 <pre> create(int p) { d->temp_p=p; m->create(); } coin(float v) { d->temp_v=v; if (d->cf+v>=d->price) m->coin(1); else m->coin(0); } sugar() { m->additive(1); } tea() { m->dispose_drink(1); } latte() { m->dispose_drink(2); } insert_cups(int n) { m->insert_cups(n); } set_price(float p) { d->temp_p=p; m->set_price() } cancel() { m->cancel(); } </pre>	<p>where,</p> <p><i>m</i>: pointer to the MDA-EFSM</p> <p><i>d</i>: pointer to the data store DS-1</p> <p>In the data store:</p> <p><i>cf</i>: represents a cumulative fund</p> <p><i>price</i>: represents the price for a drink</p>
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Vending-Machine-2 <pre> CREATE(float p) { d->temp_p=p; m->create(); } COIN(int v) { d->temp_v=v; if (d->cf+v>=d->price) m->coin(1); else m->coin(0); } CARD(int x) { if (x>=d->price) m->card(); } SUGAR() { m->additive(2); } CREAM() { m->additive(1); } COFFEE() { m->dispose_drink(1); } InsertCups(int n) { m->insert_cups(n); } SetPrice(int p) { d->temp_p=p; m->set_price() } CANCEL() { m->cancel(); } </pre>	<p>where,</p> <p><i>m</i>: pointer to the MDA-EFSM</p> <p><i>d</i>: pointer to the data store DS-2</p> <p>In the data store:</p> <p><i>cf</i>: represents a cumulative fund</p> <p><i>price</i>: represents the price for a drink</p>
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2 - Class diagram of the MDA of the VM components

3 - Class Descriptions and documentation

VM1

User Interface for VM1.

```
#include <VM1.hpp>
```

Public Functions

Name	
	VM1 (AbstractFactory <i>a</i> , <i>MDA</i> <i>m</i>)
virtual	~VM1 ()
void	create (int p)Create a new instance, and set initial price.
void	coin (float v)insert coins
void	sugar ()Request sugar as an additive.
void	tea ()Request tea to be disposed.
void	latte ()Request latte to be disposed.
void	insert_cups (int n)Request to insert cups.
void	set_price (float p)Request a price change of a drink.
void	cancel ()Request cancellation of current selection.

VM2

User Interface for VM2.

```
#include <VM2.hpp>
```

Public Functions

Name	
	VM2 (AbstractFactory <i>a</i> , <i>MDA</i> <i>m</i>)
virtual	~VM2 ()
void	CREATE (float p)Create a new instance, and set initial price.
void	COIN (int v)insert coins
void	SUGAR ()Request sugar as an additive.
void	CREAM ()Request cream as an additive.
void	COFFEE ()Request coffee to be disposed.
void	InsertCups (int n)Request to insert cups.
void	SetPrice (int p)Request a price change of a drink.
void	CANCEL ()Request cancellation of current selection.
void	CARD (int x)

4 - Sequence Diagrams