

DDS PROJECT DESIGN

Vending Machine for cold and Hot beverages

Team members:

G . Nithin Kumar Reddy (211CS121)

Guruprasad Ambesange (211CS126)



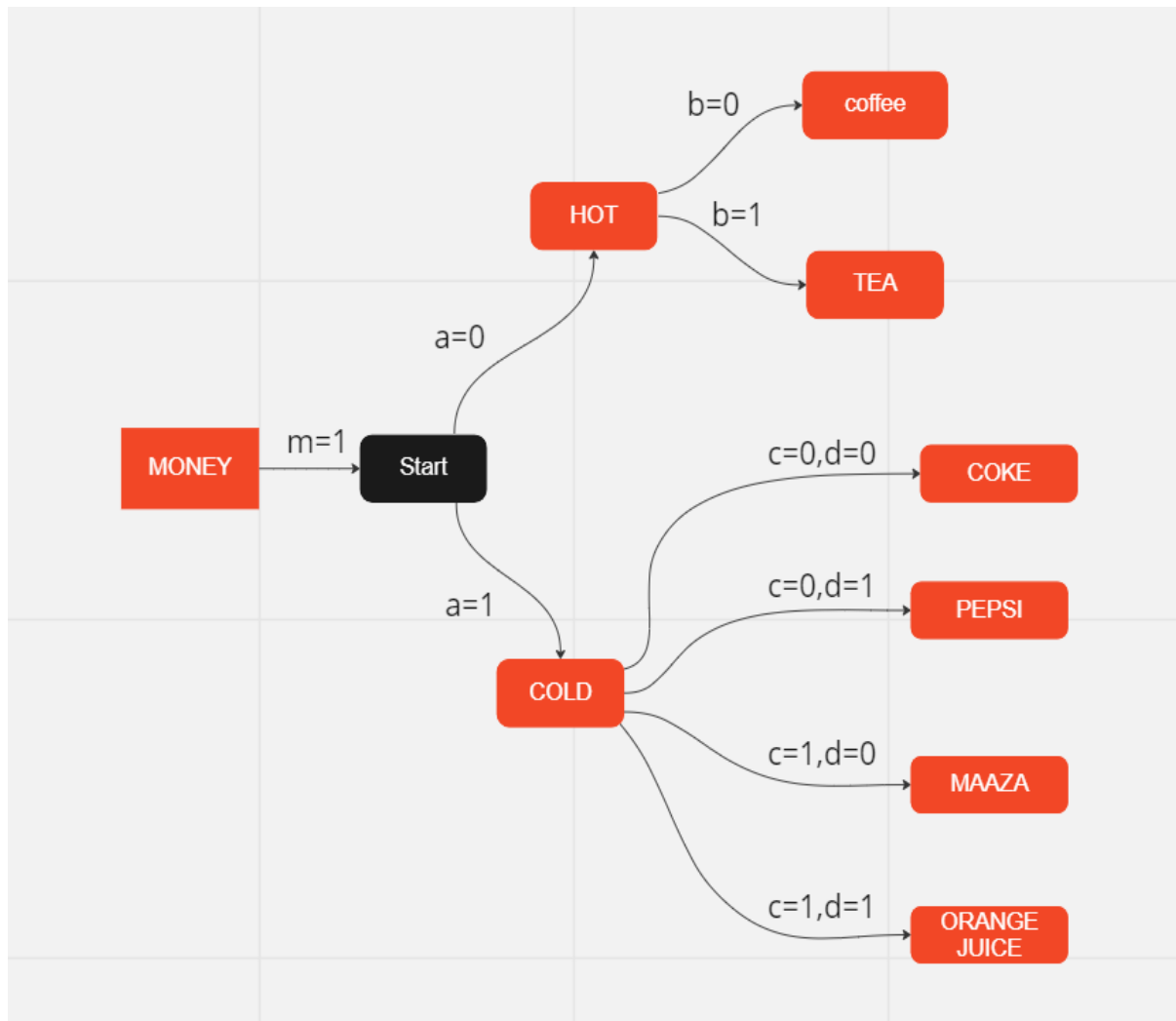
Abstract:

Basically, our design of vending machine will give both cold and hot beverages. To illustrate it, we have included two hot beverages and four cold beverages, it can be changed or even added more drinks accordingly to the demand.

Problems with the existing machines and their solutions:

- The customer may drink the beverage and escape without paying the money if the shop owner is busy with other customers, Sometimes the customer may forget to pay the money
To overcome this issue, we have designed in such a way that, it works only if money is paid.
- We haven't yet experienced a vending machine which has both hot and cold beverages, but our design overcomes this issue too!!

Flow Chart:



The above flow chart explains our model, i.e if Money is paid, the machine starts, the user should give input to the system in terms of 0 or 1 as select line inputs, 0 represents hot beverages while 1 represents cold beverages, the same is done to obtain hot beverages. since there are four cold beverages, four different combinations are required, we have done it using combinations of 0 and 1 as inputs to two select lines as shown in the above flow chart

Truth table:

Money	a	b	c	d	Coffee	Tea	Coke	Pepsi	Maaza	Orange Juice
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0	0	0
0	0	0	1	0	0	0	0	0	0	0
0	0	0	1	1	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0	0	0	0
0	0	1	1	0	0	0	0	0	0	0
0	0	1	1	1	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0
0	1	0	0	1	0	0	0	0	0	0
0	1	0	1	0	0	0	0	0	0	0
0	1	0	1	1	0	0	0	0	0	0
0	1	1	0	0	0	0	0	0	0	0
0	1	1	0	1	0	0	0	0	0	0
0	1	1	1	0	0	0	0	0	0	0
0	1	1	1	1	0	0	0	0	0	0
1	0	0	0	0	1	0	0	0	0	0
1	0	0	0	1	1	0	0	0	0	0
1	0	0	1	0	1	0	0	0	0	0
1	0	0	1	1	1	0	0	0	0	0
1	0	1	0	0	0	1	0	0	0	0
1	0	1	0	1	0	1	0	0	0	0
1	0	1	1	0	0	1	0	0	0	0
1	0	1	1	1	0	1	0	0	0	0
1	1	0	0	0	0	0	1	0	0	0
1	1	0	0	1	0	0	0	1	0	0
1	1	0	1	0	0	0	0	0	1	0
1	1	0	1	1	0	0	0	0	0	1
1	1	1	0	0	0	0	1	0	0	0
1	1	1	0	1	0	0	0	1	0	0
1	1	1	1	0	0	0	0	0	1	0
1	1	1	1	1	0	0	0	0	0	1

Truth table explanation:

Variable 'a' is a select line for a 1:2 decoder.

Variable 'b' is a select line for a 1:2 decoder.

Variable 'c','d' are select lines for a 2:4 decoder.

a – 0 mean Hot

a – 1 mean Cold

b – 0 mean Coffee

b – 1 mean Tea

c, d – 0 0 mean Coke

c, d – 0 1 mean Pepsi

c, d – 1 0 mean Maaza

c, d – 1 1 mean Orange Juice.

K-MAP FOR COFFEE:

Group : 1

M,a \ b,c,d	000	001	011	010	110	111	101	100
00	0 ₀	0 ₁	0 ₃	0 ₂	0 ₆	0 ₇	0 ₅	0 ₄
01	0 ₈	0 ₉	0 ₁₁	0 ₁₀	0 ₁₄	0 ₁₅	0 ₁₃	0 ₁₂
11	0 ₂₄	0 ₂₅	0 ₂₇	0 ₂₆	0 ₃₀	0 ₃₁	0 ₂₉	0 ₂₈
10	1 ₁₆	1 ₁₇	1 ₁₉	1 ₁₈	0 ₂₂	0 ₂₃	0 ₂₁	0 ₂₀

$$\text{Coffee}(M, a, b, c, d) = Ma'b'$$

K- MAP FOR TEA:

Group : 1

M,a \ b,c,d	000	001	011	010	110	111	101	100
00	0 ₀	0 ₁	0 ₃	0 ₂	0 ₆	0 ₇	0 ₅	0 ₄
01	0 ₈	0 ₉	0 ₁₁	0 ₁₀	0 ₁₄	0 ₁₅	0 ₁₃	0 ₁₂
11	0 ₂₄	0 ₂₅	0 ₂₇	0 ₂₆	0 ₃₀	0 ₃₁	0 ₂₉	0 ₂₈
10	0 ₁₆	0 ₁₇	0 ₁₉	0 ₁₈	1 ₂₂	1 ₂₃	1 ₂₁	1 ₂₀

$$\text{Tea}(M, a, b, c, d) = Ma'b$$

K-MAP FOR COKE:

Group : 1

M,a \ b,c,d	000	001	011	010	110	111	101	100
00	0 ₀	0 ₁	0 ₃	0 ₂	0 ₆	0 ₇	0 ₅	0 ₄
01	0 ₈	0 ₉	0 ₁₁	0 ₁₀	0 ₁₄	0 ₁₅	0 ₁₃	0 ₁₂
11	1 ₂₄	0 ₂₅	0 ₂₇	0 ₂₆	0 ₃₀	0 ₃₁	0 ₂₉	1 ₂₈
10	0 ₁₆	0 ₁₇	0 ₁₉	0 ₁₈	0 ₂₂	0 ₂₃	0 ₂₁	0 ₂₀

$$\text{Coke}(M, a, b, c, d) = \text{Mac}'d'$$

K-MAP FOR PEPSI:

Group : 1

$M,a \backslash b,c,d$	000	001	011	010	110	111	101	100
00	0 ₀	0 ₁	0 ₃	0 ₂	0 ₆	0 ₇	0 ₅	0 ₄
01	0 ₈	0 ₉	0 ₁₁	0 ₁₀	0 ₁₄	0 ₁₅	0 ₁₃	0 ₁₂
11	0 ₂₄	1 ₂₅	0 ₂₇	0 ₂₆	0 ₃₀	0 ₃₁	1 ₂₉	0 ₂₈
10	0 ₁₆	0 ₁₇	0 ₁₉	0 ₁₈	0 ₂₂	0 ₂₃	0 ₂₁	0 ₂₀

$$\text{Pepsi}(M, a, b, c, d) = \text{Mac}'d'$$

K-MAP FOR MAAZA:

Group : 1

$M,a \backslash b,c,d$	000	001	011	010	110	111	101	100
00	0 ₀	0 ₁	0 ₃	0 ₂	0 ₆	0 ₇	0 ₅	0 ₄
01	0 ₈	0 ₉	0 ₁₁	0 ₁₀	0 ₁₄	0 ₁₅	0 ₁₃	0 ₁₂
11	0 ₂₄	0 ₂₅	0 ₂₇	1 ₂₆	1 ₃₀	0 ₃₁	0 ₂₉	0 ₂₈
10	0 ₁₆	0 ₁₇	0 ₁₉	0 ₁₈	0 ₂₂	0 ₂₃	0 ₂₁	0 ₂₀

$$\text{Maaza}(M, a, b, c, d) = \text{Mac}d'$$

K-MAP FOR ORANGE JUICE:

Group : 1

M,a \ b,c,d	000	001	011	010	110	111	101	100
00	0	0	0	0	0	0	0	0
01	0	0	0	0	0	0	0	0
11	0	0	1	0	0	1	0	0
10	0	0	0	0	0	0	0	0

Orange juice(M, a, b, c, d) = Macd

CIRCUIT DIAGRAM:

