Cache Simulator Project

This project is to help students understand cache structure.

Given a small memory shown below:

Cache Worksheet

Small Memory Example:

Address	Binary	Data	Address	Binary	Data	Address	Binary	Data	Address	Binary	Data
0	000000	92	16	010000	FB	32	100000	A	48	110000	85
1	000001	70	17	010001	44	33	100001	F1	49	110001	13
2	000010	8C	18	010010	DD	34	100010	4C	50	110010	60
3	000011	FD	19	010011	F6	35	100011	45	51	110011	C5
4	000100	B9	20	010100	A6	36	100100	63	52	110100	56
5	000101	E2	21	010101	43	37	100101	2C	53	110101	F2
6	000110	40	22	010110	11	38	100110	40	54	110110	89
7	000111	C2	23	010111	17	39	100111	98	55	110111	9E
8	001000	D	24	011000	98	40	101000	91	56	111000	6
9	001001	9A	25	011001	88	41	101001	65	57	111001	E2
10	001010	D1	26	011010	8	42	101010	E	58	111010	B
11	001011	F8	27	011011	6A	43	101011	76	59	111011	A2
12	001100	43	28	011100	6D	44	101100	EE	60	111100	B2
13	001101	7E	29	011101	B8	45	101101	5D	61	111101	41
14	001110	B7	30	011110	BC	46	101110	18	62	111110	B1
15	001111	75	31	011111	12	47	101111	29	63	111111	7B

Please implement a two way set associative cache for this memory system as shown below:

C) Set Associative Cache of Size 8 words and set size 2 with FIFO replacement.

set	Tag	Data	tag	Data
0				
1				
2				
3				

1. Use the high level programming language of your choice to implement this project. The final product should be able to be tested on my office laptop.
2. Your project should fulfill the following functions:
    a. Allow user to input any requested memory address
    b. The cache simulator will use the input address and try to find it in cache.
    c. If the data requested is in the cache, output “Cache Hit” and output the requested data along with it; if the data requested is not in the cache, the project should output “Cache Miss”, and also bring in the data from memory to the corresponding cache location.
    d. No matter you will have GUI or not, the small cache should be displayed and updated as each time the user input memory address to request data. The display of the small memory is optional.
    e. Please submit your project through moodle link and provide with detailed instructions on how to test your project. (Readme.txt file).