

I was successful to complete 2 challenges. One was PAULMON2 Run command and the SDCC heap memory management analysis. I have attached the user interface program of the SDCC heap memory management analysis in the lab files with the screenshots showing the proper analysis of memory management.

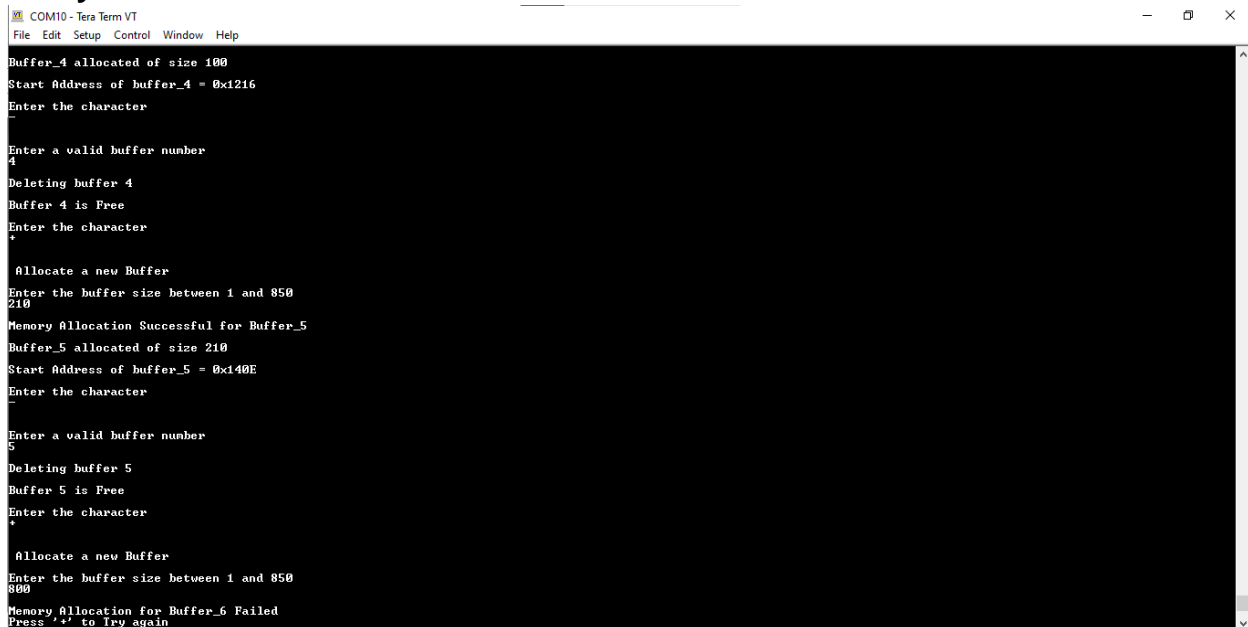
**The Screenshots of working are attached in the lab submission files.**

## Buffer created.



```
COM10 - Tera Term VT
File Edit Setup Control Window Help
***** HEAP REPORT *****
Buffer 0
Start Address = 0x402
Ending Address = 0xB00
Buffer Size = 1800
Storage characters in buffer = 0
Free Spaces in buffer = 1800
-----
Buffer 1
Start Address = 0xB0C
Ending Address = 0x1214
Buffer Size = 1800
Storage characters in buffer = 0
Free Spaces in buffer = 1800
-----
Buffer 2
Start Address = 0x1216
Ending Address = 0x12DE
Buffer Size = 200
Storage characters in buffer = 0
Free Spaces in buffer = 200
-----
Buffer 3
Start Address = 0x12E0
Ending Address = 0x140C
Buffer Size = 300
Storage characters in buffer = 0
Free Spaces in buffer = 300
-----
```

## Analysis:



```
COM10 - Tera Term VT
File Edit Setup Control Window Help
Buffer_4 allocated of size 100
Start Address of buffer_4 = 0x1216
Enter the character
4
Enter a valid buffer number
4
Deleting buffer 4
Buffer 4 is Free
Enter the character
*
Allocate a new Buffer
Enter the buffer size between 1 and 850
210
Memory Allocation Successful for Buffer_5
Buffer_5 allocated of size 210
Start Address of buffer_5 = 0x140E
Enter the character
5
Enter a valid buffer number
5
Deleting buffer 5
Buffer 5 is Free
Enter the character
*
Allocate a new Buffer
Enter the buffer size between 1 and 850
800
Memory Allocation for Buffer_6 Failed
Press '*' to try again
```

## Calculations:

Challenge - Memory Management Analysis  
Total heap size - 4800

Create 2 Buffers of size 1800

	1800	1800	
Step 2	Buffer 0	Buffer 1	

	402	1800	800	1800	200
Step 3	(402)	0	(800)	1	2

(Add Buffer 2)	1800	1800	(216)	200	300
Step 4	(402)	0		1	2

(Add Buffer 3)		(800)	(1216)	(12E0)	
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Delete Buffer 2

Step 5	1800	1800		300
	0	1		3

### 3 Possibilities

(a) if we create buffer of 100 bytes.

	1800	1800	100	300
	0	1	4	3
(402)	(800)	(1216)	(12E0)	

(b) if we create a Buffer of 210 bytes.

	1800	(800)	1800	300	210
	0	1		3	4
			(120E)	(140E)	

(c)

Last case of Buffer 800 bytes will not be created