CET 241: Day 6

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Basics to remember (IMPORT, EXPORT, extern)

- IMPORT (in .S): to access a variable/ function from .S declared in .C
- EXPORT (in .S): to access a function/variable in .S (i.e., PROC) from .C
- extern (in .c): to access a variable/function from .C declared in .S
- To access a variable/function from .S declared in .C, no need extra action in .C file.

Example of Accessing C Variables (main is in C)

C Program (main.c)

```
int counter;
int c ;

int getValue();
void increment();
void setValue(int b);

int main(void) {
            c = 0;
            setValue(1);
            increment();
            c = getValue();
            c = c + 1;
            while(1);
}
```

Assembly Program (count.s)

```
 AREA test, CODE
            counter
            ALIGN
            ENTRY

setValue   PROC
            LDR r1, =counter
            STR r0, [r1]
            BX  lr
            ENDP

getValue   PROC
            LDR r1, =counter
            LDR r0, [r1]
            BX  lr
            ENDP

increment   PROC
            LDR r1, =counter
            LDR r0, [r1]
            BX  lr
            ENDP

            END
```

r0 value?

Example of Accessing Data Defined in Assembly (main is in ASM)

Assembly Program	C Program

AREA main, CODE
__main
 	
ALIGN
 	
__main MOVS r2,#0
MOVS r0,#1
BL setValue
BL increment
BL getValue
MOV r2,r0
stop B stop
 	
AREA myData, DATA
 	
counter SPCACE 4
	int counter;
	
	int getValue() {
	counter;
	}
	
	void increment() {
	counter;
	}
	
	void setValue(int c) {
	counter ;
	}