Assignment 2 – Advanced ARM Architecture

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Conditional statements are used to break the flow of the main program. They generally check for a condition and accordingly change the flow of the execution of the program. The ITE is one such statement which is used to check for a certain condition and if the condition returns True, then the 'THEN' block gets executed. If 'False', then the ‘Else' block gets executed. In ARM the syntax is as follows.

ITTEE {condition}

;//code to be executed

;//when condition returns True.

;//code to be executed

;//when condition returns False.

Note that If the 'Then' block is multiple lines long, then we write those many T's in ITE statement. Further, there are only a select few codes allowed that can be written in the {condition} part of the ITE statement.

Now, apart from all this, we also need to write the {condition} in every following 'Then' block statements and the opposite of {condition} in the 'Else' block statements. This is so that the execution of any of the 'Then' statement shouldn't alter the flags that are a part of the {condition}. In our case too, that's exactly the mistake that was made. If we alter the code to reflect that, then the code compiles without any errors.

Altered Code:

```
MOVLT R3, #0x100

MOVLT R8, #0x200

MOVLT R7, #0x200

MOVGE R6, #0x200
```

Granted the MOV instruction here might not affect any of the flags. I think that maybe they just wanted to follow a general convention and so we continue to use the same convention. When tested with the following code, the flags did not change.

```
CMP r6, #8

ITE LT

ADDLT r6 , r6, #-1 ;

ADDGE r6, #2 ;
```

The ADD instruction generally affects the NZVC flags, but in this case affected no flag.