**If Statements with Simple Conditionals & IT Instructions**

|  |  |
| --- | --- |
| C code | ARM Assembly |
| int32\_t a, b ;  if (a > 10)  b = 0 ; | LDR R0,a  CMP R0,#10  IT GT  LDRGT R0,=0  STRGT R0,b |
| int32\_t a, b, c ;  if (a > 10)  b = 0 ;  else  c = 1 ; | LDR R0,a  CMP R0,#10  IT GT  LDRGT R0,=0  STRGT R0,b  LDRLE R0,=1  STRLE R0,c |

**If Statements with Simple Conditionals & Branch Instructions**

|  |  |  |
| --- | --- | --- |
| C without goto’s | C with goto’s | ARM Assembly |
| int32\_t a ;  if (a > 10)  *then-statement* ; | int32\_t a ;  if (a <= 10) goto L1 ;  *then-statement* ;  L1: … | LDR R0,a  CMP R0,#10  BLE L1  *then-statement-instructions*  L1: … |
| int32\_t a ;  if (a > 10)  *then-statement* ;  else  *else-statement* ; | int32\_t a ;  if (a <= 10) goto L1 ;  *then-statement* ;  goto L2 ;  L1: *else-statement* ;  L2: … | LDR R0,a  CMP R0,#10  BLE L1  *then-statement- instructions*  B L2  L1: *else-statement- instructions*  L2: … |

**If Statements with Compound Conditionals & Branch Instructions**

|  |  |  |
| --- | --- | --- |
| C without goto’s | C with goto’s | ARM Assembly |
| int32\_t a, b ;  if (a > 10 && b < 20)  *then-statement ;* | int32\_t a, b ;  if (a <= 10) goto L1 ;  if (b >= 20) goto L1 ;  *then-statement ;*  L1: … | LDR R0,a  CMP R0,#10  BLE L1  LDR R0,b  CMP R0,#20  BGE L1  *then-statement-instructions*  L1: … |
| int32\_t a, b ;  if (a > 10 && b < 20)  *then-statement ;*  else  *else-statement ;* | int32\_t a, b ;  if (a <= 10) goto L1 ;  if (b >= 20) goto L1 ;  *then-statement ;*  goto L2  L1: *else-statement ;*  L2: … | LDR R0,a  CMP R0,#10  BLE L1  LDR R0,b  CMP R0,#20  BGE L1  *then-statement-instructions*  B L2  L1: *else-statement-instructions*  L2: … |
| int32\_t a, b ;  if (a > 10 || b < 20)  *then-statement ;* | int32\_t a, b ;  if (a > 10) goto L1 ;  if (b >= 20) goto L2 ;  L1: *then-statement ;*  L2: … | LDR R0,a  CMP R0,#10  BGT L1  LDR R0,b  CMP R0,#20  BGE L2  L1: *then-statement-instructions*  L2: … |
| int32\_t a, b ;  if (a > 10 || b < 20)  *then-statement ;*  else  *else-statement ;* | int32\_t a, b ;  if (a > 10) goto L1 ;  if (b >= 20) goto L2 ;  L1: *then-statement ;*  goto L3  L2: *else-statement ;*  L3: … | LDR R0,a  CMP R0,#10  BGT L1  LDR R0,b  CMP R0,#20  BGE L2  L1: *then-statement-instructions*  B L3  L2: *else-statement-instructions*  L3: … |