# UTMC APPLICATION NOTE

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## UT69R000 Interrupt Architecture

The following outlines an instruction sequence that protects un-interruptible code segments from external interrupts. Figure 1 depicts a main program that accesses two service routines and numerous interrupt service routines. During execution of the main program and service routine # 2 all interrupts are un-masked and enabled. Execution of service routine #1 requires masking and disabling of external interrupts to prevent interruption.

Figure 1.  Program Code Block Diagram
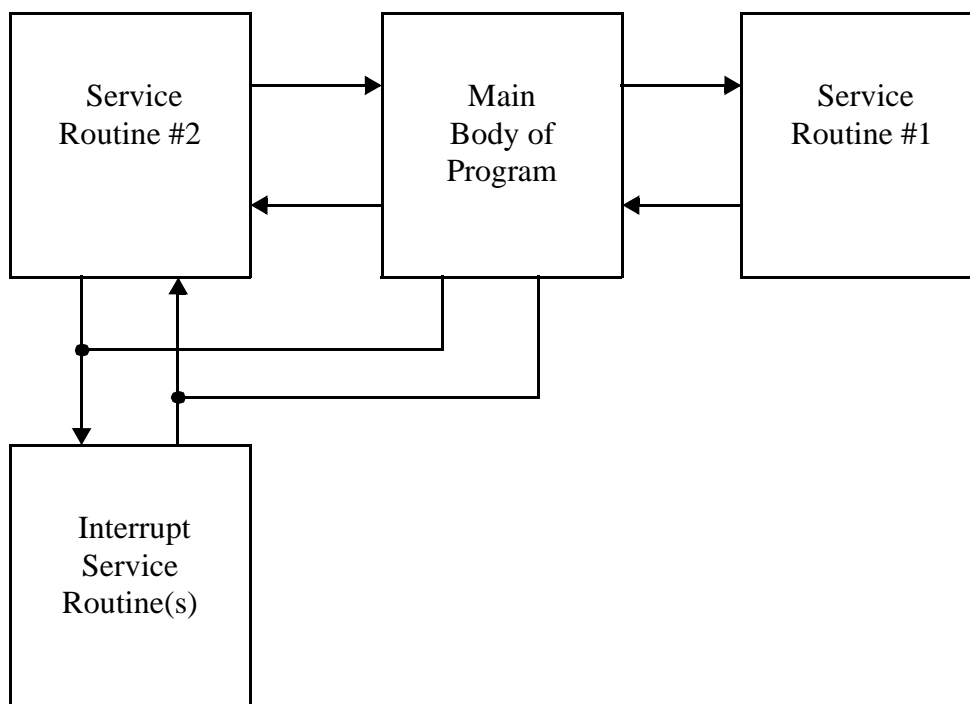


The UT69R000 requires execution of following sequences of instructions prior to calling a routine that requires protection from interrupts.

```
        MOV R_D, 0000
        OTR R_D, MK          ; clear mask register
        NOP
        NOP
        CALL R_D, SRV_RTNE2; branch to protected service routine
```

Immediately following the call instruction (i.e., branch to protected service routine), execute OTR R0, DSBL instruction to disable interrupts. The combination of masking and disabling prevents any latent interrupt vectors from within the protected service routine. After execution of the protected service routine, restore the mask register (OTR $R_D$,MK), pop return value in $R_D$ (POP

$R_D$, $R_S$), enable interrupts (OTR $R_D$, ENBL), and execute a branch back to main program (CALL $R_D$, $R_S$).

    MOV $R_D$, $XXXX_{16}$
    OTR $R_D$, MK          ; re-store mask register
    POP $R_D$, $R_S$          ; establish return value
    OTR $R_D$, ENBL        ; enable interrupts
    CALL $R_D$, MAIN; branch to protected service routine