

Princeton University
COS 217: Introduction to Programming Systems
Assembler Assignment: Error Handling (for Extra Credit)

Errors illustrated by the “err_*.s” test programs:

err_01boundary.s

A mnemonic must be on a 4-byte boundary.
A .half instruction must be on a 2-byte boundary.
A .word instruction must be on a 4-byte boundary.

err_02symbol.s

A label must not be defined more than once.

err_03directive.s

The .ascii, .asciz, .byte, .half, and .word instructions must not appear in the bss section.
In a .skip instruction, the argument must not be negative.
In an .align instruction, the argument must be a power of 2.

err_04immvalue.s

In a format 3 instruction, the simm13 operand must not be more than 13 bits long.
In a sll instruction, the simm13 operand not be more than 31.
In a ta instruction, the imm7 operand must be a 7-bit value (in the range -64 to 127).
In a sethi instruction, the imm22 operand must be in the range -0x200000 to 0x3ffff.
In a .byte instruction, the operand must not be more than 8 bits long.
In a .half instruction, the operand must not be more than 16 bits long.

err_05relocation.s

In a format 3 instruction, the expression must evaluate to a nonrelocatable (absolute) value.
In a format 3 instruction, the %hi operator on symbols is not allowed.
In a sethi instruction, the %lo operator on symbols is not allowed.