

## MIPS Register-Usage Conventions

### Special hardware roles:

- \$0 - hardwired to always contain 0
- \$31 - return address from a procedure - always set by jal.

### Registers to avoid using

- \$1 - assembler temporary. The assembler may convert user-written memory reference and jump instructions to two instruction sequences using this, so use this very carefully (if at all)
- \$26, \$27 - used by operating system kernel, so may change unpredictably when an interrupt occurs. **Therefore, user programs should not use these.**

### Caller-save registers

- \$2, \$3 - return value from procedures.
- \$4-\$7 or \$4-\$11 - parameters to procedures (two different conventions).
- \$8-\$15 or \$12-\$15 - temporaries (depending on which parameter convention is used).
- \$24-25 - temporaries

### Callee-save registers

- \$16-\$23 - temporaries.
- \$28 (\$gp) - points to global variable storage area in memory.
- \$29 (\$sp) - stack pointer. (Follows special conventions - decrement at procedure entry; increment by same amount at exit; value must only change by a multiple of 16)
- \$30 (\$fp) - points to stack frame for current procedure; if not used for this purpose, a procedure may use this for any purpose.