HW1

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Problem: Determine whether the given integer is palindrome, or not.

- **Key Idea**: Only the integer which is palindrome is the same as the original number even if the order is reversed.

- **Implementation**:
  - 1. Read Integer:

```
    # syscall (read_int)
    li      $v0, 5
    syscall
    add     $t0, $zero, $v0     # $t0: input
```

  - 2. Implement function that returns integer with reversed order from given input

```
reverse:
    addi    $sp, $sp, -4
    sw      $ra, 0($sp)

    li      $t1, 10
    div     $a0, $t1
    mflo    $s0
    mfhi    $s1

    # next parameter
    add     $a0, $zero, $s0

    # make reverse-number
    mul     $a1, $a1, 10
    add     $a1, $a1, $s1

    # loop condition
    bne     $a0, $zero, reverse

    # end condtion
    lw      $ra, 0($sp)
    addi    $sp, $sp, 4
    add     $v0, $zero, $a1
    jr      $ra
```

We can get reversed integer using for loop, following the sketch below.

```
result = 0;
while(n!=0){
    remaider = n % 10;
    result = result*10 + remainer;
    n /= 10;
}
```

- 3. Compare Original Integer with Reversed Integer:

```
# palindrome is same as origin number
add     $t2, $zero, $v0     # $t2: reverse
add     $t3, $zero, $t0     # $t3: input
beq     $t2, $t3, print_true
j       print_false
```

- 4. Print result:

```
print_true:
    li      $v0, 4
    la      $a0, true
    syscall

    lw      $31, saved_ret_pc
    jr      $31

print_false:
    li      $v0, 4
    la      $a0, false
    syscall

    lw      $31, saved_ret_pc
    jr      $31
```