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Microprocessadores

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Aula 06

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Declaração SWITCH

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Structure of a switch statement

```
switch (n) {
  (case k:  k-block)*
  default:  default-block
}
```

n: inteiro; k: constante;

Cada bloco k é uma sequência de declarações (termina com break);

Execution rules

- if value of k=n, execute corresponding k-block
  - keep executing subsequent blocks until `break`
- if no such k, execute default-block

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Translation strategy

1. in text segment, implement and label each k-block and the default-block, in order of switch statement
2. in data segment, declare **array of addresses** (jump table)
   - in array at position *i*, label of case-block for *i*=k
   - for "gaps" in cases, give label for default case
3. translate switch statement into an array lookup
   - check bounds of n and jump to default case if out
   - if in range, translate n to corresponding index (e.g. n*4)
4. use `jr` to jump to the address from array lookup

Exemplo

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Example: Print properties of one digit number

```
# Pseudocode:
#   switch (n) {
#     case 0:
#       print("n is zero\n")
#       break
#     case 4:
#       print("n is even\n")
#     case 1:
#     case 9:
#       print("n is a square\n")
#       break
#
#
#   ... (continue in next col)
```

```
      case 2:
        print("n is even\n")
      case 3:
      case 5:
      case 7:
        print("n is prime\n")
        break
      case 6:
      case 8:
        print("n is even\n")
        break
      default:
        print("out of range\n")
    }
```