

Microprocessadores

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Aula 06

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Declaração SWITCH

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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Declaração SWITCH

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 **jump** to jump to the address from array lookup

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Exemplo

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")
# }
```

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