

Decision Examples

Lecture 6
Section 2.7

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1 Compound Conditions in MIPS

2 Example

3 Assignment

Outline

- 1 Compound Conditions in MIPS
- 2 Example
- 3 Assignment

Compound Conditions

- In C, we are free to write conditions such as

```
a >= 0 && a <= 100
```

and

```
a >= 100 || a <= 0
```

- We cannot do that in assembly language.
- So, how do we express the logic?

Logical Conjunctions in C

Logical Conjunction in C

```
if (a >= 0 && a <= 100)
    (action)
```

Logical Conjunction in C

```
if (a >= 0)
    if (a <= 100)
        (action)
```

Logical Conjunction in Unstructured C

```
if (a < 0) goto dec_end
    if (a > 100) goto dec_end
        (action)
```

```
dec_end:
```

- By DeMorgan's Law, the condition

`a >= 100 || a <= 0`

is equivalent to

`!(a < 100 && a > 0)`

Logical Conjunctions in C

Logical Conjunction in C

```
if (a >= 1000 || a <= 0)
    (action)
```

Logical Conjunction in Unstructured C

```
if (a >= 100) goto dec_else
    if (a > 0) goto dec_end
dec_else:
    (action)
dec_end:
```

Outline

1 Compound Conditions in MIPS

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Example

- Write a MIPS program that will read three integers and display them in ascending order.

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- 1 Compound Conditions in MIPS
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Assignment

Assignment

- Read Section 2.7.