Conditional Branch Example

```
int absdiff(int x, int y)
{
    int result;
    if (x > y) {
        result = x-y;
    } else {
        result = y-x;
    }
    return result;
}
```

```
absdiff:
    pushl   %ebp
    movl    %esp, %ebp          }  Setup

    movl    8(%ebp), %edx
    movl    12(%ebp), %eax
    cmpl    %eax, %edx
    jle     .L6                 }  Body1

    subl    %eax, %edx
    movl    %edx, %eax          }  Body2a
    jmp .L7
.L6:
    subl %edx, %eax             }  Body2b
.L7:
    popl %ebp
    ret                         }  Finish
```

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Conditional Branch Example (Cont.)

```c
int goto_ad(int x, int y)
{
  int result;
  if (x <= y) goto Else;
  result = x-y;
  goto Exit;
Else:
  result = y-x;
Exit:
  return result;
}
```

```
absdiff:
    pushl   %ebp              }  Setup
    movl    %esp, %ebp
    movl    8(%ebp), %edx     ⎫
    movl    12(%ebp), %eax    ⎪
    cmpl    %eax, %edx        ⎬  Body1
    jle     .L6               ⎭
    subl    %eax, %edx        ⎫
    movl    %edx, %eax        ⎬  Body2a
    jmp .L7                   ⎭
.L6:
    subl %edx, %eax           }  Body2b
.L7:
    popl %ebp                 }  Finish
    ret
```

- **C allows "goto" as means of transferring control**
  - Closer to machine-level programming style

- **Generally considered bad coding style**

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Conditional Branch Example (Cont.)

```
int goto_ad(int x, int y)
{
  int result;
  if (x <= y) goto Else;
  result = x-y;
  goto Exit;
Else:
  result = y-x;
Exit:
  return result;
}
```

```
absdiff:
    pushl   %ebp
    movl    %esp, %ebp
    movl    8(%ebp), %edx
    movl    12(%ebp), %eax
    cmpl    %eax, %edx
    jle     .L6
    subl    %eax, %edx
    movl    %edx, %eax
    jmp .L7
.L6:
    subl %edx, %eax
.L7:
    popl %ebp
    ret
```

Setup

Body1

Body2a

Body2b

Finish

Conditional Branch Example (Cont.)

```c
int goto_ad(int x, int y)
{
  int result;
  if (x <= y) goto Else;
  result = x-y;
  goto Exit;
Else:
  result = y-x;
Exit:
  return result;
}
```

```
absdiff:
    pushl   %ebp              ⎫ Setup
    movl    %esp, %ebp        ⎭
    movl    8(%ebp), %edx     ⎫
    movl    12(%ebp), %eax    ⎬ Body1
    cmpl    %eax, %edx        ⎪
    jle     .L6               ⎭
    subl    %eax, %edx        ⎫
    movl    %edx, %eax        ⎬ Body2a
    jmp .L7                   ⎭
.L6:
    subl %edx, %eax           ⎬ Body2b
.L7:
    popl %ebp                 ⎫ Finish
    ret                       ⎭
```

Conditional Branch Example (Cont.)

```c
int goto_ad(int x, int y)
{
  int result;
  if (x <= y) goto Else;
  result = x-y;
  goto Exit;
Else:
  result = y-x;
Exit:
  return result;
}
```

```
absdiff:
    pushl   %ebp                  ⎫ Setup
    movl    %esp, %ebp            ⎭
    movl    8(%ebp), %edx         ⎫
    movl    12(%ebp), %eax        ⎪
    cmpl    %eax, %edx            ⎬ Body1
    jle     .L6                   ⎭
    subl    %eax, %edx            ⎫
    movl    %edx, %eax            ⎬ Body2a
    jmp .L7                       ⎭
.L6:
    subl %edx, %eax               ⎬ Body2b
.L7:
    popl %ebp                     ⎫ Finish
    ret                           ⎭
```