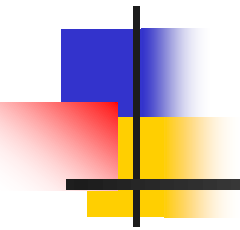
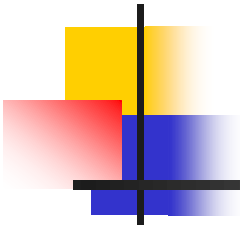


# CSC 108
# Introduction to Computer Programming

Lecture 6

Decision-making with `if`

University of Mount Union



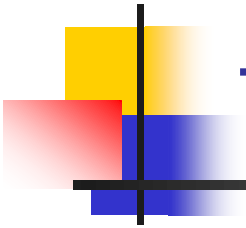
# Choosing Among Alternatives

We can write Processing programs that can operate differently in different situations

We can perform a test and take different actions based on the results of the test

This is called ***selection*** in computer programming

most commonly-used selection statement in programming:  the **if** statement



# The **if** Statement in Processing

purpose:  ask a yes/no or a true/false question, and specify different actions to be taken based on the results of the test

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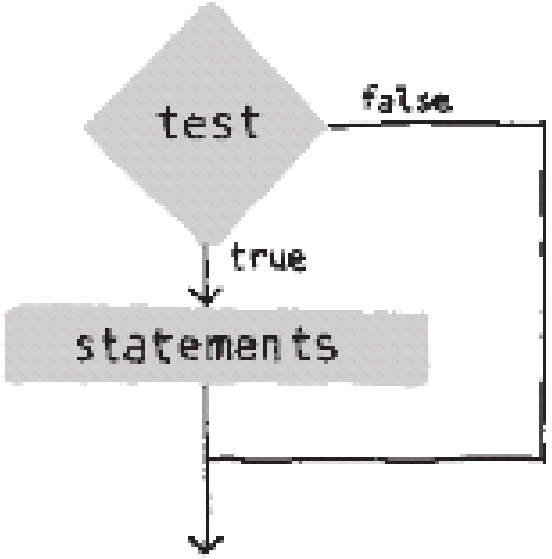
simplest form:

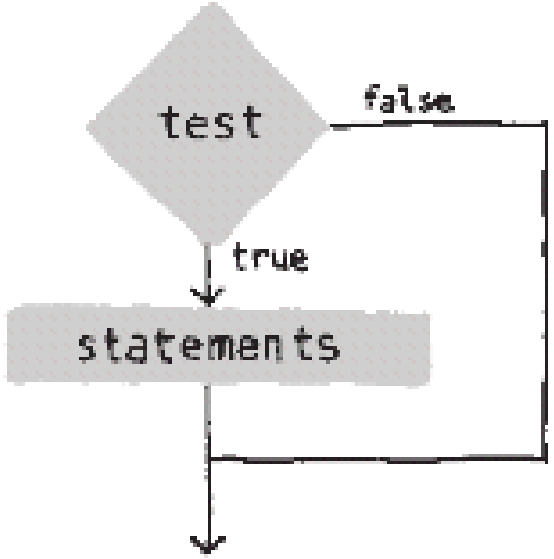


# The **if** Statement in Processing

purpose: ask a yes/no or a true/false question, and specify different actions to be taken based on the results of the test

simplest form:

```
print(num);
print(" is ");
if   ( num <= 0 ) {
     print("not");
}
print("positive");
```



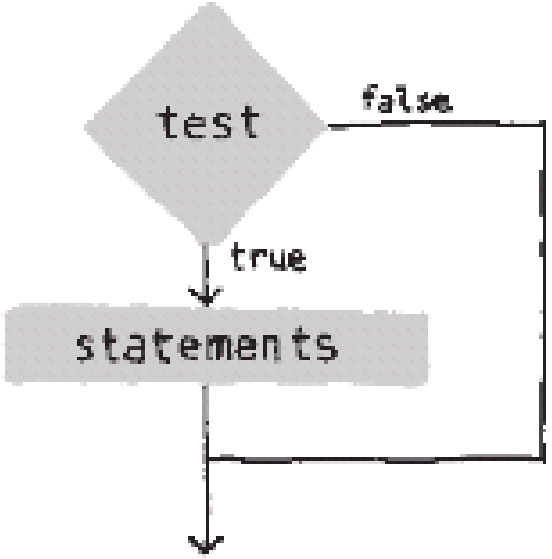
# The **if** Statement in Processing

purpose: ask a yes/no or a true/false question, and specify different actions to be taken based on the results of the test

meaning:

(1) evaluate the test

(2) if test is true, execute the statements between curly braces

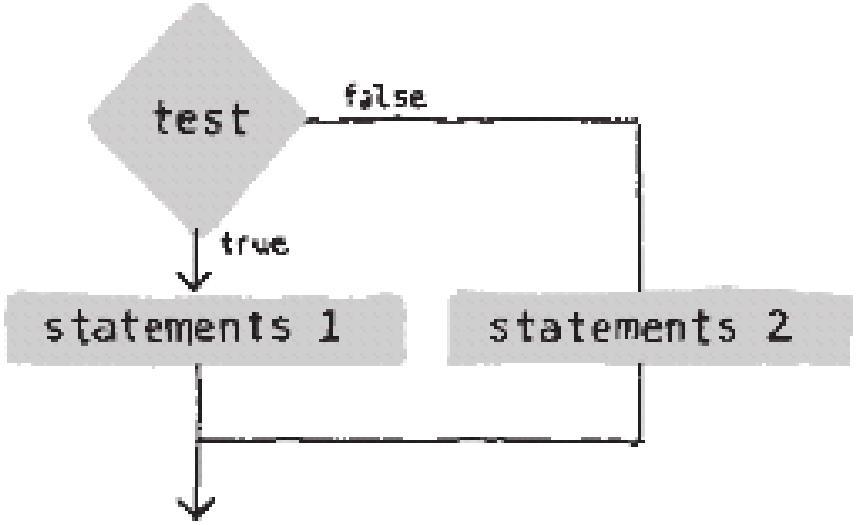


# **if** statement followed by **else**

meaning:

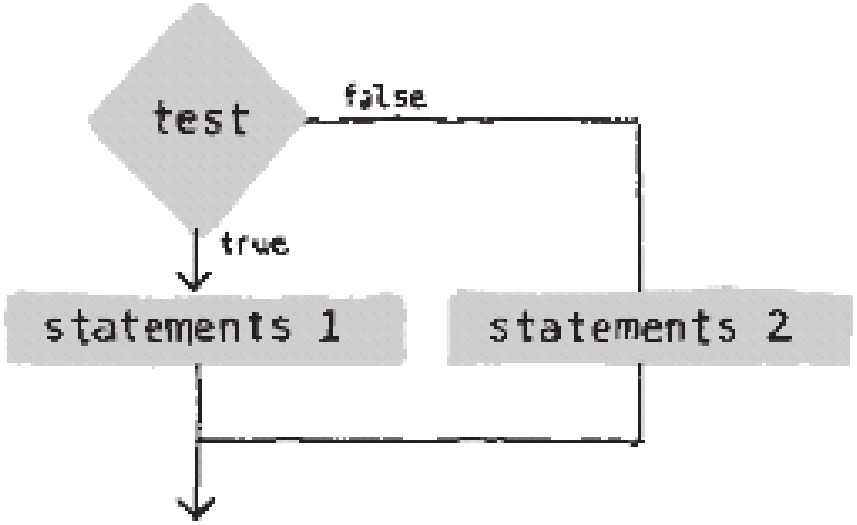
if test is true,
 do first block of code
  skip else part

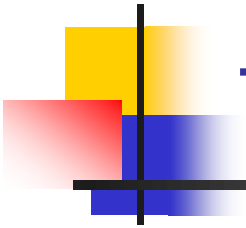
if test is false,
 do second block of code
  skip if part



# if statement followed by else

```
print(num);
print(" is ");
if   ( num > 0 ) {
  print("positive");
}
else {
  print("not positive");
}
```





# Types of tests

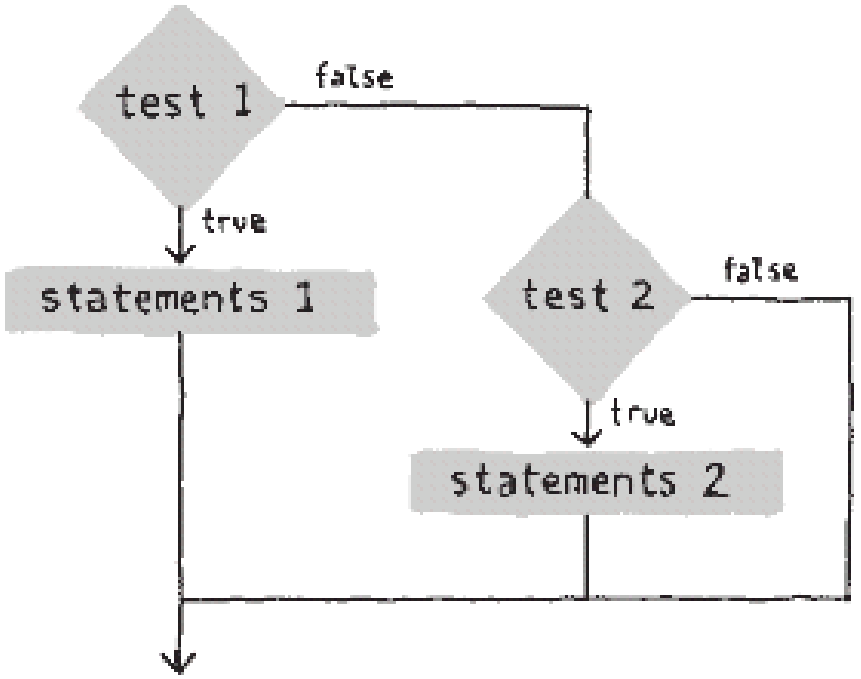
## Comparisons

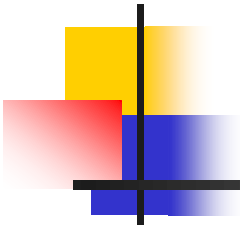
six operators:

| | |
|---|---|
| greater than: | > |
| less than: | < |
| greater than or equal: | >= |
| less than or equal: | <= |
| not equal: | != |
| equal to: | == |

# more than 2 choices: **else if**

```
print(num);
print(" is ");
if   ( num > 0 ) {
  print("positive");
}
else if ( num < 0 ){
  print("negative");
}
else {
  print("zero");
}
```





# Example of decision making

Write a Processing code block that prints the proper message indicating whether the value of an int variable named year is in the 21st century or came before the 21st century

Different messages should be printed based on the value of the variable year – use an if statement to perform a test, and print different messages based on the results of the test

# Example of decision making

```
print(year);

if  ( _____________________ ) {

  print(" is in the 21st Century");
}
else {
  print(" came before the 21st Century");
}
```

# Example of decision making

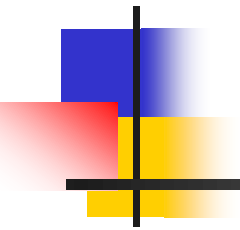
```
print(year);

if   ( year > 2000 ) {

  print(" is in the 21st Century");
}
else {
  print(" came before the 21st Century");
}
```

# Better programming style for this example

```
print(year);
if  ( year > 2000 ) {
  print(“ is in”);
}
else {
  print(“ came before”);
}
print(“ the 21st Century”);
```



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Lecture 6

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