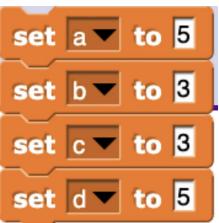


Q: What will the following expression evaluate to based on the given values?





- A. True
- B. False





CPSC 100

Computational Thinking

Code Explanation + Tracing

Instructor: Parsa Rajabi

Department of Computer Science

University of British Columbia



Agenda

- Learning Goals
- Course Admin
- Intro to Programming [Continued]
 - Comparing Loops
 - Code Explanation [Activity]



Learning Goals

After this today's lecture, you should be able to:

- Identify and understand the differences between different types of loops (e.g. repeat, repeat until, for)
- Trace through code using sequences of instructions, variables, loops, and conditional statements in short programs
- Describe in English what a block of Snap! code does.
- Evaluate if a given snap code block correctly implements an algorithm.



Course Admin



Course Admin

- Lab #4
 - Due on Thursday, Feb 6 at 11:59pm
- **Lab #5** (Feb 12)
 - Drop-in; used for midterm + project help
- Post-Class (PC) Quiz #3
 - Only 1 attempt, 60 minutes
 - Due on Sunday, Feb 9 at 11:59pm
- Midterm
 - 📅 February 14 💘
 - 🧭 3:00-3:50 pm
 - − ↑ CHBE 101 [Chemical and Biological Engineering Building]



Programming Basics



Programming Basics

0. Variable

set to 0



- a. A named storage location for data
- 1. Sequencing
 - a. In order (top-down)
- 2. Selection
 - a. Conditional Structures
- 3. Iteration
 - a. Loop Structures













Components of an Algorithm

0. Variable

set to 0

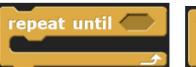


- a. A named storage location for data
- 1. Sequencing
 - a. In order (top-down)
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Loops



Repeat Blocks

Repeat some code a finite number of time



Repeat UNTIL a particular condition

has been met.

If the condition is never met, then, it goes on *forever*.



when clicked

```
for (i) = 1 to (10)
```

say (i) for (1) secs

For Loops

say Bye bye! for 2 secs



Comparing Loops



What's the difference between these loops?

```
when clicked

set i to 1

repeat until i = 10

say i for 2 secs

change i by 1

say Bye bye! for 2 secs
```

```
when clicked
set i ▼ to 1
repeat 10
 say (i) for (2) secs
 change i v by 1
say Bye bye! for 2 secs
```

```
when clicked

for i = 1 to 10

say i for 2 secs

say Bye-bye! for 2 secs
```



What's the difference between these loops?

```
when clicked

set i to 1

repeat until i = 10

say i for 2 secs

change i by 1

say Bye-bye! for 2 secs
```

```
set i 🔻 to 1
repeat (10
say i for 2 secs
 change i v by 1
say Bye bye! for 2 secs
```

```
when clicked

for i = 1 to 10

say i for 2 secs

say Bye-bye! for 2 secs
```



Code Explanation



What does this code block do?

Describe the code in terms of input and output and what is being done.

The block consumes....

It does...

It produces/displays/reports...

```
when Clicked
ask What is the starting temperature (°C) of the water and wait
set time ▼ to 0
set temp v to answer
repeat until
              temp > 100
 change time ▼ by 20
 say (join (temp) °C (→) for (2) secs
 set temp ▼ to
               (temp) +
say It's boiling oooooooo!!!!!!! for 2 secs
    join It-took time seconds () for (2) secs
```



What is the purpose of this block?

The block consumes the starting temperature for water *It increases* the temperature and time

It produces the time it takes to get the water from the starting temperature to 100 degree Celsius

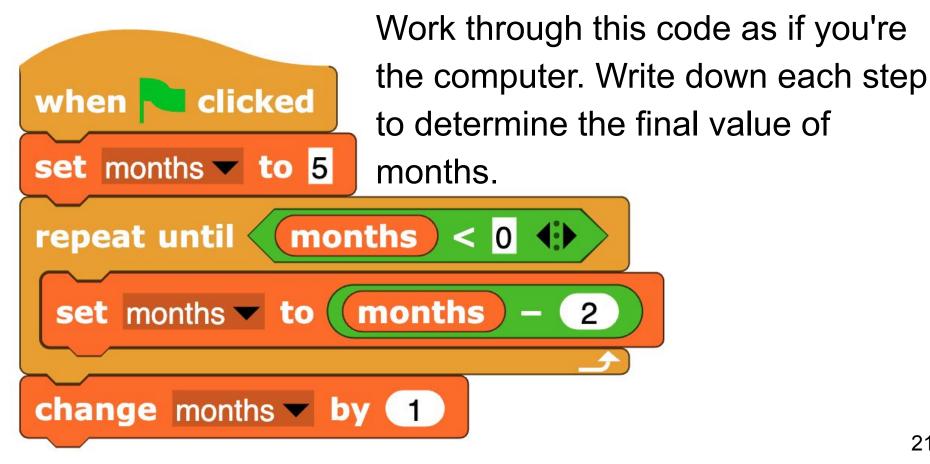
```
when a clicked
ask What is the starting temperature (°C) of the water and wait
set time ▼ to 0
set temp v to answer
              temp > 100
repeat until
 change time by 20
 say join temp °C () for 2 secs
 set temp ▼ to
                temp +
say It's boiling ooooooooo!!!!!! for 2 secs
    join It-took (time) seconds () for (2) secs
```



Code Tracing Activity



Activity - Step through this code





Take-Home Activity



What does this code block do?

Describe the code in terms of input and output and what is being done.

The block consumes....

It does...

It produces/displays/reports...

```
when 🦳 clicked
set balance ▼ to 0
set count ▼ to 0
ask How much is the item and wait
set balance to answer
change count ▼ by 1
repeat until (balance) > 100
 say (join You've spent balance) dollars (1) for (2) secs
 ask How much is the item and wait
 set balance v to (balance) + (answer)
 change count by 1
    join You've spent
                    balance dollars () for 2
say Bye•bye
```



What does this code block do?

What is the value of **tot**, **num** and **count** when the block is run? [for practice, you can assume a number between 1-6]

What does this code block do?

```
when clicked
set tot ▼ to 0
set num ▼ to 0
ask How many values will you be entering and wait
set count v to answer
for (i) = 1 to count
 ask Enter an non-negative integer and wait
                         = 0
      answer mod 2
  change num ▼ by 1
 change tot ▼ by answer
```



Q: What will the following expression report?

A. True

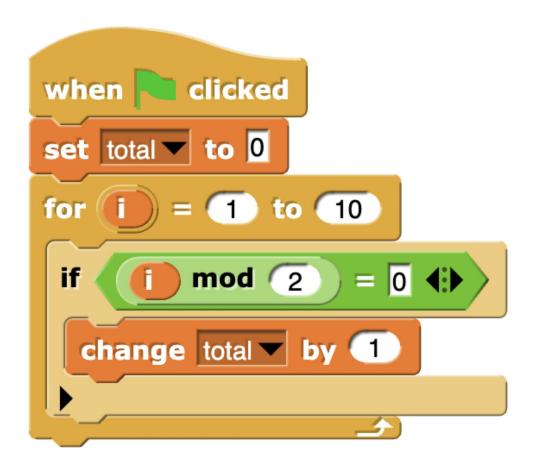
B. False





Q: What is the value of total when this code block is run?

What does this code block do?





Wrap up



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