

CS 115, Autumn 2021

Lecture 17: `while` loops

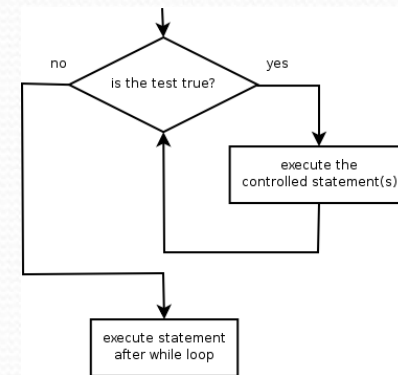


Thanks to Marty Stepp and Stuart Reges for parts of these slides

The while loop

- **while loop:** Repeatedly executes its body as long as a logical test is true.

```
while test:  
    statement(s)
```



- **Example:**

```
num = 1  
while num <= 200:  
    print(str(num) + " ", end='')  
    num = num * 2
```

initialization

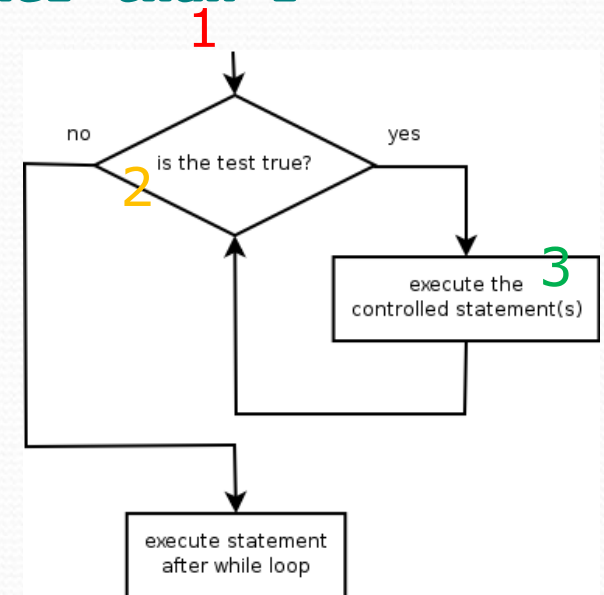
test

update

output: 1 2 4 8 16 32 64 128

Example while loop

```
# finds the first factor of 91, other than 1
n = 91
1 factor = 2
2 while n % factor != 0:
3     factor += 1
4 print("First factor is", factor)
# output: First factor is 7
```



Exercise: numbers

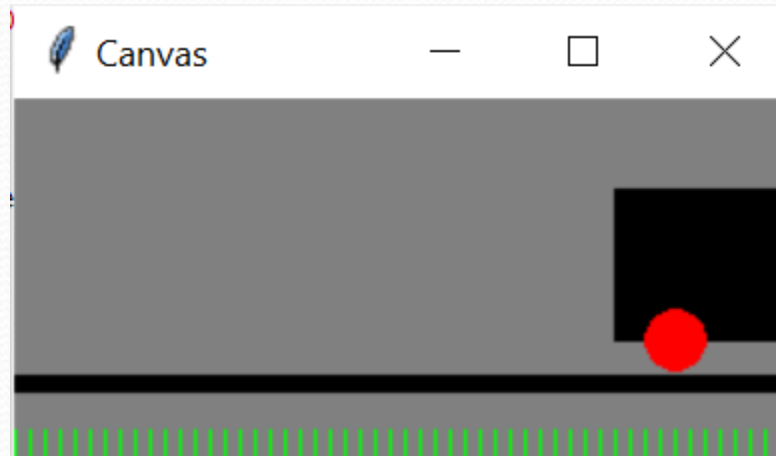
- Write a program that prompts the user for a number and then outputs that number of stars.

How many stars? 12

```
*****
```

Exercise

- Change the single green line at the bottom of the car program to be a line of separate blades of grass



Exercise

- Alter the car animation to make it slowly accelerate.
 - Can we do this with `panel.animate(ms, function)`?
 - No – we set the speed once.
 - Instead, use `panel.sleep(ms)` to make the animation pause for the passed in time.
 - How can we make this repeat?
 - A `while` loop!