

WEEK 4

PROGRAMMING FUNDAMENTALS

ASSIGNMENT #1

- Late submissions will receive a 10% deduction per day.
- Solution will be posted Saturday morning.
- Once solution is posted, submissions will no longer be accepted.

COMPUTER PROGRAMMING



FIRST STEPS...



PROGRAMMING FUNDAMENTALS

1. Basic Data Types

2. Variables

3. Conditionals

4. Arrays

5. Hashes

6. Loops

7. *Classes & Methods*

** similar concepts in every language, but might have a different name*

BASIC DATA TYPES

BASIC DATA TYPES

- Numeric values
- Non-numeric values
- True, False
- No value

code-along/1-data.rb

VARIABLES



Leon Bambrick

@secretGeek



There are 2 hard problems in computer science: cache invalidation, naming things, and off-by-1 errors.

♡ 1,147 8:20 AM - Jan 1, 2010



CONDITIONALS



INPUT



OUTPUT

INPUT



algorithm



OUTPUT

INPUT



algorithm



OUTPUT

tacos

```
# if input is "tacos",  
#   :yum:
```



kale

```
# if input is "kale",  
#   :grimace:
```



code-along/2-conditionals.rb

ARRAYS

https://en.wikipedia.org/wiki/List_of_lists_of_lists

~ To Do List

- ☒ 1) Make a to do list
- ☒ 2) Check off first thing on the 'To do' list
- ☒ 3) Realize you've already accomplished 2 things on the list
- in progress 4) Reward yourself with a nap

~ To Do List

- ☒ 1) Make a to do list
- ☒ 2) Check off first thing on the 'To do' list
- ☒ 3) Realize you've already accomplished 2 things on the list
- ☐ in progress 4) Reward yourself with a nap

```
task1 = "make list"  
task2 = "check off first todo"  
task3 = "realize you've completed 2 todos"  
task4 = "reward yourself with a nap"
```

~ To Do List

- ☒ 1) Make a to do list
- ☒ 2) Check off first thing on the 'To do' list
- ☒ 3) Realize you've already accomplished 2 things on the list
- ☐ in progress 4) Reward yourself with a nap

```
tasks = [  
    "make list",  
    "check off first todo",  
    "realize you've completed 2 todos",  
    "reward yourself with a nap"  
]
```

code-along/3-arrays.rb

HASHES

~ To Do List

- ☒ 1) Make a to do list
- ☒ 2) Check off first thing on the 'To do' list
- ☒ 3) Realize you've already accomplished 2 things on the list
- in progress 4) Reward yourself with a nap

```
tasks = [  
    "make list",  
    "check off first todo",  
    "realize you've completed 2 todos",  
    "reward yourself with a nap"  
]  
  
task1 = tasks[0] # "make list"
```


~ To Do List

- ☒ 1) Make a to do list
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- ☐ in progress 4) Reward yourself with a nap

```
# task1  
description = "make list"  
completed = true
```

~ To Do List

- ☒ 1) Make a to do list
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- ☐ in progress 4) Reward yourself with a nap

```
# task1
task1_description = "make list"
task1_completed = true
```

~ To Do List

- ☒ 1) Make a to do list
- ☒ 2) Check off first thing on the 'To do' list
- ☒ 3) Realize you've already accomplished 2 things on the list
- ☐ in progress 4) Reward yourself with a nap

```
# task1
# task1_description = "make list"
# task1_completed = true

task1 = {
  "description" => "make list",
  "completed" => true
}
```



HAWAII DRIVER LICENSE

NUMBER 01-47-87441

DOB 06/03/1981 EXP 06/03/2008

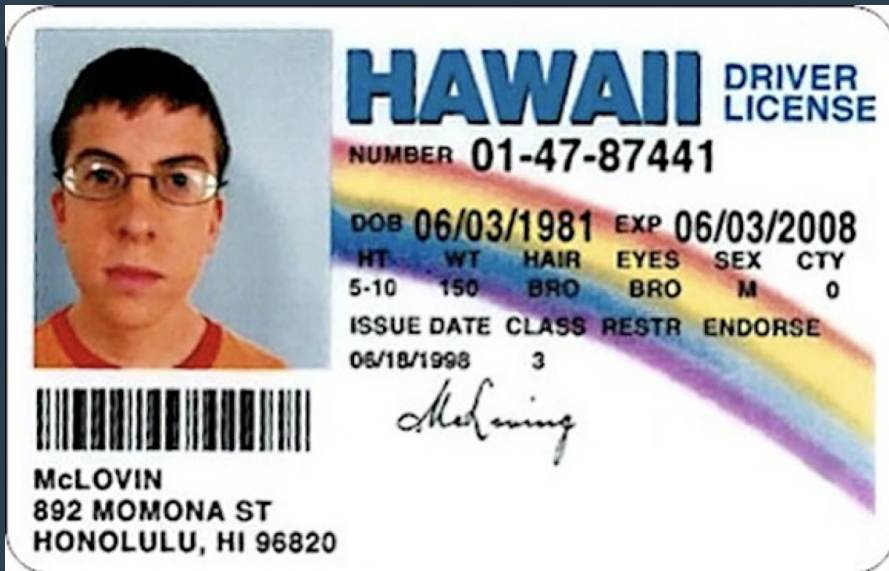
HT	WT	HAIR	EYES	SEX	CTY
5-10	150	BRO	BRO	M	0

ISSUE DATE	CLASS	RESTR	ENDORSE
05/18/1998	3		

McLovin



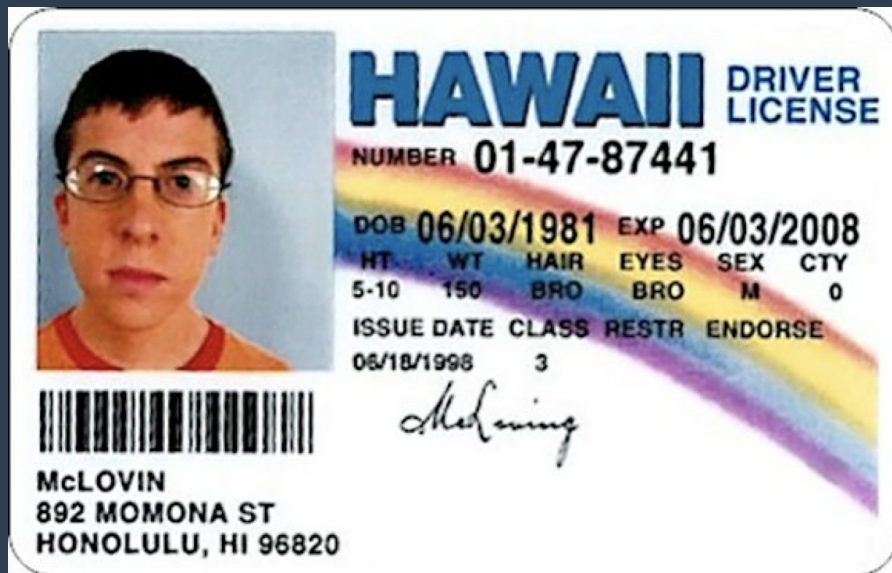
McLOVIN
892 MOMONA ST
HONOLULU, HI 96820



A Hawaii Driver License for a person named McLOVIN. The license features a photo of a young man with glasses, a rainbow graphic, and various personal details. The text on the license includes the name, address, license number, date of birth, expiration date, height, weight, hair color, eye color, sex, city, issue date, class, restrictions, and endorsements. A signature is also present.

HAWAII DRIVER LICENSE
NUMBER 01-47-87441
DOB 06/03/1981 EXP 06/03/2008
HT 5-10 WT 150 HAIR BRO EYES BRO SEX M CTY 0
ISSUE DATE 06/18/1998 CLASS 3 RESTR ENDORSE
McLOVIN
892 MOMONA ST
HONOLULU, HI 96820

```
1 name = "McLovin"  
2 license_number = "01-47-87441"  
3 birthdate = "06/31/1981"  
4 height = 70  
5 weight = 150  
6 street = "892 Momona St"  
7 city = "Honolulu"  
8 state = "HI"  
9 zip = 96820
```

```
1 license = {  
2   "name" => "McLovin",  
3   "license_number" => "01-47-87441",  
4   "birthdate" => "06/31/1981",  
5   "height" => 70,  
6   "weight" => 150,  
7   "street" => "892 Momona St",  
8   "city" => "Honolulu",  
9   "state" => "HI",  
10  "zip" => 96820  
11 }
```

code-along/4-hashes.rb

DATA

REPRESENTS REAL WORLD THINGS

ARRAYS + HASHES =
ANYTHING

~ To Do List

- ☒ 1) Make a to do list
- ☒ 2) Check off first thing on the 'To do' list
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- ☐ in progress 4) Reward yourself with a nap

```
tasks = [  
    "make list",  
    "check off first todo",  
    "realize you've completed 2 todos",  
    "reward yourself with a nap"  
]
```

~ To Do List

- ☒ 1) Make a to do list
- ☒ 2) Check off first thing on the 'To do' list
- ☒ 3) Realize you've already accomplished 2 things on the list
- ☐ in progress 4) Reward yourself with a nap

```
tasks = [  
  {  
    "description" => "make list",  
    "completed" => true  
  },  
  {  
    "description" => "check off first todo",  
    "completed" => true  
  },  
  {  
    "description" => "realize you've completed 2 todos",  
    "completed" => true  
  },  
  {  
    "description" => "reward yourself with a nap",  
    "completed" => false  
  },  
]
```

E-COMMERCE

```
1 store = {  
2   "products" => [  
3     {  
4       "name" => "Guitar Strings",  
5       "image" => "https://images.unsplash.com/...",  
6       "price" => 5.49,  
7       "description" => "These are favored by many musicians."  
8     },  
9     ...  
10  ],  
11  "promotions" => [...]  
12 }
```

VACATION RENTALS



Entire apartment in Ukrainian Village
Personalized Apartment in Vintage Building



4 guests · 2 bedrooms · 2 beds · 1 bath
Washer · Kitchen · Dryer · Air conditioning

★ 4.86 (29)

\$71 / night
\$2,254 total



Entire loft in Near North Side
Kasa Chicago King Studio River North Apartment

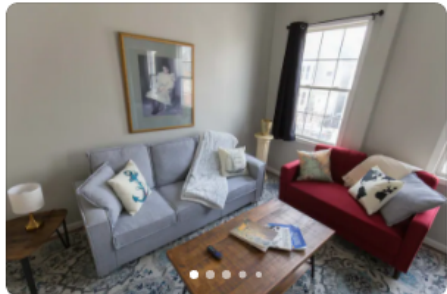


3 guests · Studio · 2 beds · 1 bath
Washer · Kitchen · Dryer · Air conditioning

💎 Rare find

★ 4.84 (69)

~~\$105~~ **\$95 / night**
\$3,000 total



Entire apartment in Logan Square
Lovely 3BR in Heart of Logan Square, 5min to Train



5 guests · 3 bedrooms · 3 beds · 1 bath
Washer · Kitchen · Dryer · Air conditioning

\$70 / night
\$2,328 total

```
1 {  
2   "listings" => [  
3     {  
4       "title" => "Personalized Apartment in Vintage Buildin  
5       "type" => "Entire Apartment",  
6       "neighborhood" => "Ukranian Village",  
7       "guests" => 4,  
8       "bedrooms" => 2,  
9       "bathrooms" => 1,  
10      "amentities" => [  
11        "Washer",  
12        "Kitchen",  
13        "Dryer",  
14        "Air conditioning"  
15      ],  
16      "averageRating" => 4.86,  
17      "numberOfReviews" => 29,  
18      "ratePerNight" => 71.0  
19    },  
20    ...  
21  ]  
22 }
```

RINCE & REPEAT

LOOPS





SAY HI TO FRIENDS



SAY HI TO FRIENDS

```
1 friends = ["Rachel", "Monica", "Phoebe", "Ross", "Chandler", "Joey"]
```

SAY HI TO FRIENDS

```
1 friends = ["Rachel", "Monica", "Phoebe", "Ross", "Chandler", "Joey"]
2
3 greeting = "Hi #{friends[0]}"
4 puts greeting # Hi Rachel
5
6 # greeting = "Hi #{friends[1]}"
7 # puts greeting # Hi Monica
8
9 # greeting = "Hi #{friends[2]}"
10 # puts greeting # Hi Phoebe
11
12 # greeting = "Hi #{friends[3]}"
13 # puts greeting # Hi Ross
14
15 # greeting = "Hi #{friends[4]}"
16 # puts greeting # Hi Chandler
17
18 # greeting = "Hi #{friends[5]}"
19 # puts greeting # Hi Joey
```

repeat 5 more times

OR...

repeat n times for n
elements in array

SAY HI TO FRIENDS

```
1 friends = ["Rachel", "Monica", "Phoebe", "Ross", "Chandler", "Joey"]
2
3 greeting = "Hi #{friends[0]}"
4 puts greeting # Hi Rachel
```

1. Set *index* = 0
2. Read *friend* in array at the index
3. Construct a sentence that includes "Hi" and the *friend* from step 2
4. Display the sentence
5. If this is the last element in the array, go to End (i.e. step 8)
6. Increment the index by adding 1
7. Go back to step 2 (i.e. repeat)
8. End

code-along/5-loops.rb

PRACTICE

- Posted in Canvas

NEXT WEEK

- Computer programming + SQL

SOMETIME IN THE NEXT 2 WEEKS

- "Crash course" on HTML