Week 1

EECS 183

MAXIM ALEKSA

maximal.io

Week 1

EECS 183

MAXIM ALEKSA

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Maxim Aleksa '17

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Romance Languages, Computer Science, Business

iWork team at Apple

Web development
iOS, OS X, tvOS, watchOS apps

Photography, Italianissimo, linguistics, tennis, traveling

`maximal.io/eecs183`

slides, notes, source code, links, et cetera

Discussion section

Review

New examples

Practice coding problems

Exam-style questions

Handouts

Project tips

Q&A

Discussion section

Discussion section

Expectations

Lectures and discussion sections

Zyante

Six assignments

Four projects

Two exams

Final project

Deadlines

Today
22

Assignment 0

Friday
22

Assignment 1

Friday
15

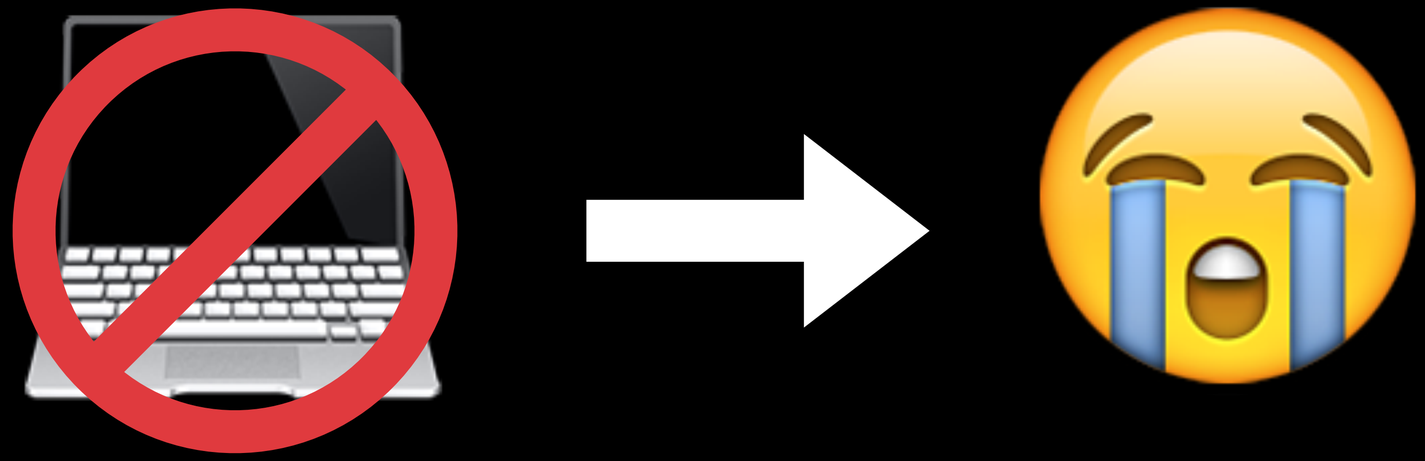
Project 1

How to get help

How to get help

0. Google
1. Piazza
2. Office hours

Back up your files



Elementary Programming Concepts

Programming

Programming

≠

Computer Science

Programming

!=

Computer Science

Computational thinking

inputs → algorithms → outputs

Algorithms

SCHEDULE A (Form 1040)

Department of the Treasury
Internal Revenue Service (99)

Itemized Deductions

▶ **Information about Schedule A and its separate instructions is at *www.irs.gov/scheduleа*.**
▶ **Attach to Form 1040.**

OMB No. 1545-0074

2014

Attachment Sequence No. **07**

Name(s) shown on Form 1040 | **Your social security number**

Caution. Do not include expenses reimbursed or paid by others.

Medical and Dental Expenses

1 Medical and dental expenses (see instructions) 1
2 Enter amount from Form 1040, line 38 | 2 |
3 Multiply line 2 by 10% (.10). But if either you or your spouse was born before January 2, 1950, multiply line 2 by 7.5% (.075) instead 3
4 Subtract line 3 from line 1. If line 3 is more than line 1, enter -0- 4

Taxes You Paid

5 State and local **(check only one box):**
a ☐ Income taxes, **or**
b ☐ General sales taxes 5
6 Real estate taxes (see instructions) 6
7 Personal property taxes 7
8 Other taxes. List type and amount ▶ 8
9 Add lines 5 through 8 9

Interest You Paid

Note. Your mortgage interest deduction may be limited (see instructions).

10 Home mortgage interest and points reported to you on Form 1098 10
11 Home mortgage interest not reported to you on Form 1098. If paid to the person from whom you bought the home, see instructions and show that person's name, identifying no., and address ▶ 11
12 Points not reported to you on Form 1098. See instructions for special rules 12
13 Mortgage insurance premiums (see instructions) 13
14 Investment interest. Attach Form 4952 if required. (See instructions.) 14
15 Add lines 10 through 14 15

Gifts to Charity

If you made a gift and got a benefit for it, see instructions.

16 Gifts by cash or check. If you made any gift of $250 or more, see instructions 16
17 Other than by cash or check. If any gift of $250 or more, see instructions. You **must** attach Form 8283 if over $500 . . . 17
18 Carryover from prior year 18
19 Add lines 16 through 18 19

Casualty and Theft Losses

20 Casualty or theft loss(es). Attach Form 4684. (See instructions.) 20

Job Expenses and Certain Miscellaneous Deductions

21 Unreimbursed employee expenses—job travel, union dues, job education, etc. Attach Form 2106 or 2106-EZ if required. (See instructions.) ▶ 21
22 Tax preparation fees 22
23 Other expenses—investment, safe deposit box, etc. List type and amount ▶ 23
24 Add lines 21 through 23 24
25 Enter amount from Form 1040, line 38 | 25 |
26 Multiply line 25 by 2% (.02) 26
27 Subtract line 26 from line 24. If line 26 is more than line 24, enter -0- 27

Other Miscellaneous Deductions

28 Other—from list in instructions. List type and amount ▶ 28

Total Itemized Deductions

29 Is Form 1040, line 38, over $152,525?
☐ **No.** Your deduction is not limited. Add the amounts in the far right column for lines 4 through 28. Also, enter this amount on Form 1040, line 40.
☐ **Yes.** Your deduction may be limited. See the Itemized Deductions Worksheet in the instructions to figure the amount to enter. 29
30 If you elect to itemize deductions even though they are less than your standard deduction, check here . . . . . ▶ ☐

Pseudocode

m.socrative.com

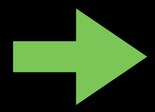
Room EECS183

Programming languages

```
cout << "hello world!";
```

```
#include <iostream>
using namespace std;

int main() {
    cout << "Hello, world!" << endl;
    return 0;
}
```



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}
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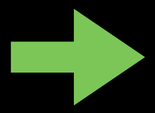

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}
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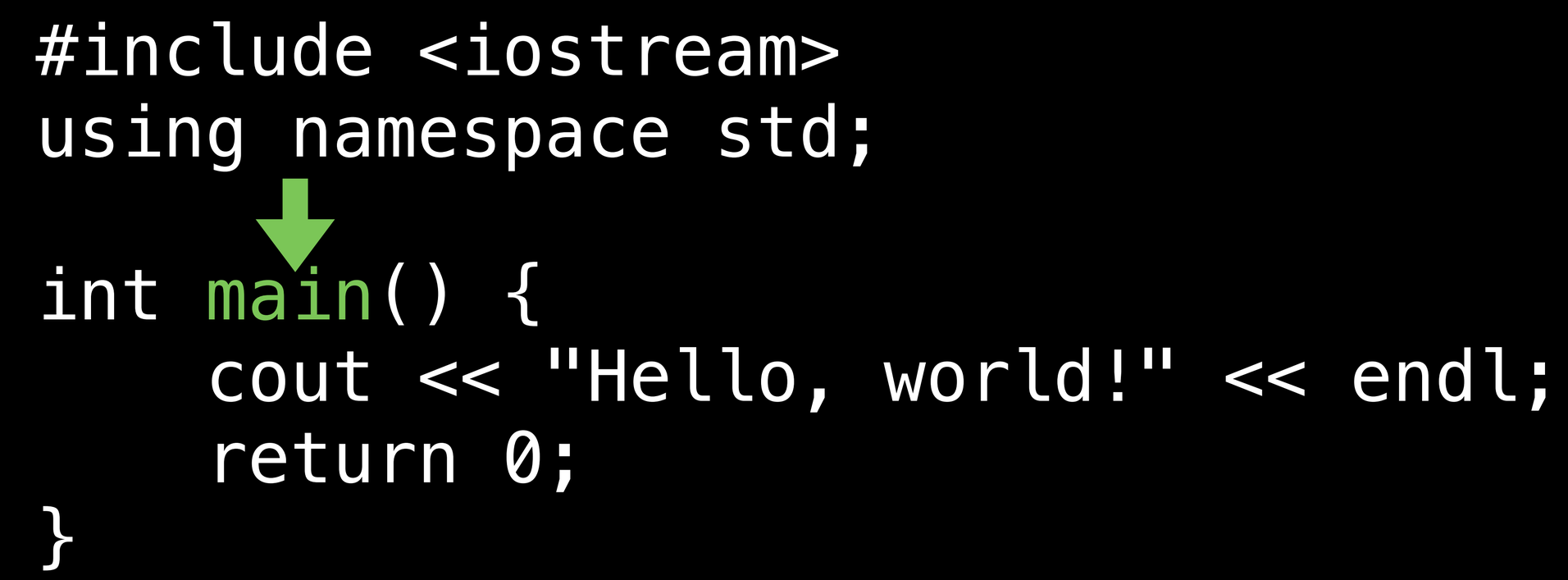
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using namespace std;
int main() {
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}

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    return 0;
}
```

```
#include <iostream>
using namespace std;

int main() {
    cout << "Hello, world!" << endl;
    return 0;
}
```

```cpp
#include <iostream>
using namespace std;

int main() {
    cout << "Hello, world!" << endl;
    return 0;
}
```

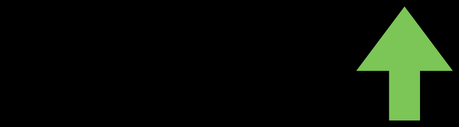
```
#include <iostream>
using namespace std;

int main() {
    cout << "Hello, world!\n";
    return 0;
}
```

```cpp
#include <iostream>
using namespace std;

int main() {
    cout << "Hello, world!" << endl;
    return 0;
}
```

```
#include <iostream>
using namespace std;

int main() {
    cout << "Hello, world!" << endl;
    return 0;
}
```



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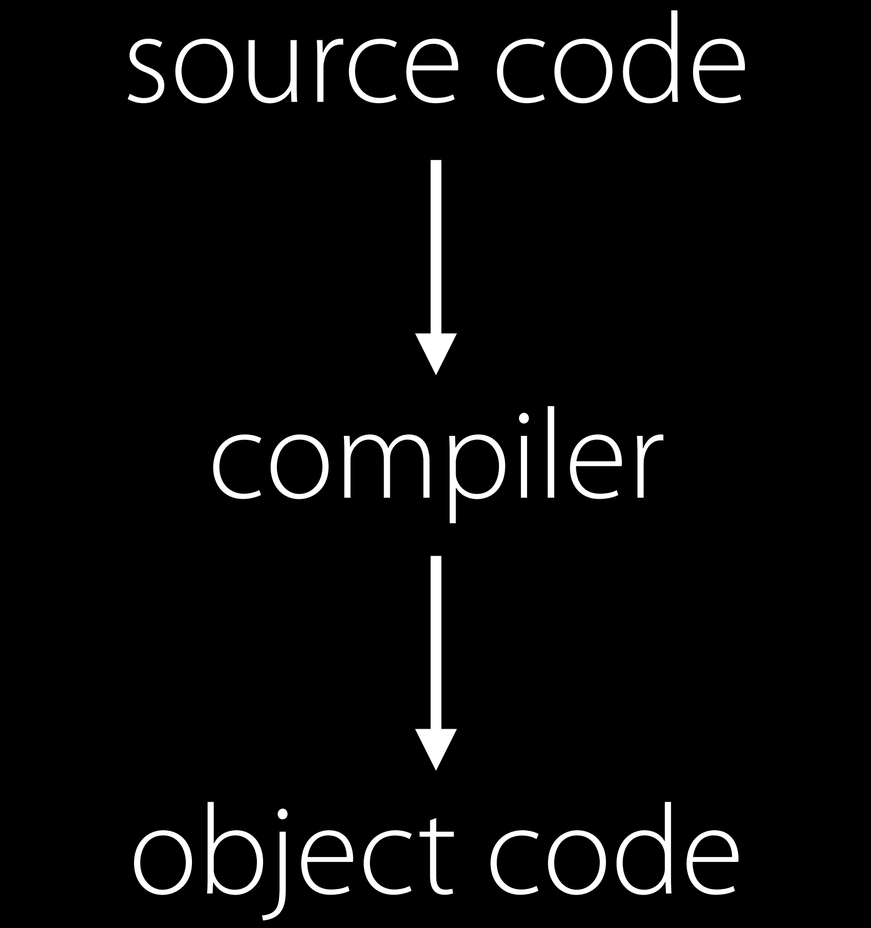
source code
compiler
object code

```
10000011 00000001 00010001 00000000 00111101 11111100 01110100 00111101
00000000 01000000 00000000 00000000 00000000 00000000 00000000 00000000
10010000 00000000 00000000 00000000 01010000 00000000 00000111 00110000
00001011 00000001 00001011 00000011 00001010 00000000 00000000 00000000
00000000 00000000 00000000 01000000 00000001 00000000 00000000 00000000
00000000 00100000 00000000 01000000 00000001 00000000 00000000 00000000
11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
10010000 10000000 00000000 01000000 00000001 00000000 00000000 00000000
00101110 01100100 01111001 01101110 01100001 01101101 01101001 01100011
10110000 00000100 00000000 00100000 00000001 00000000 00000000 00000000
00000000 00100000 00000000 00000000 00000000 00000000 00000000 00000000
00000000 00100000 00000000 00000000 00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
01110000 00010000 00000000 00100000 00000001 00000000 00000000 00000000
00000000 00000000 00000000 00100000 00000001 00000000 00000000 00000000
10110000 00000100 00000000 00100000 00000001 00000000 00000000 00000000
10100000 00000001 00000000 00000000 00000000 00000000 00000000 00000000
10110000 00000100 00000000 00000000 00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
...
```

IDE (integrated development environment)

`eecs183.org/xcode`

`eecs183.org/vs`

Variables

```
int b;
b = 2;
int a = 1;
a = b;
b = 5;
```

Variables

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int b;
b = 2;
int a = 1;
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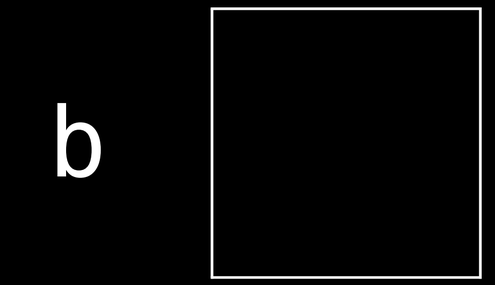
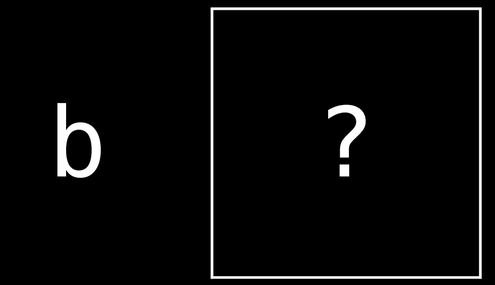


Variables

```
int b;
b = 2;
int a = 1;
a = b;
b = 5;
```



Variables

```
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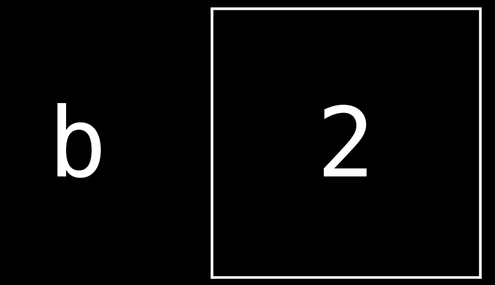
b = 2;
int a = 1;
a = b;
b = 5;
```



Variables

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int b;
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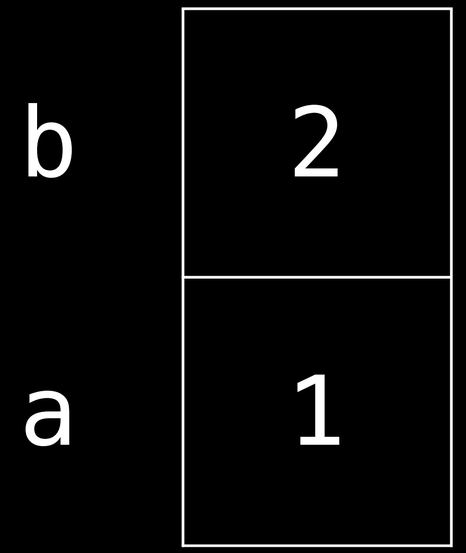

Variables

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int b;
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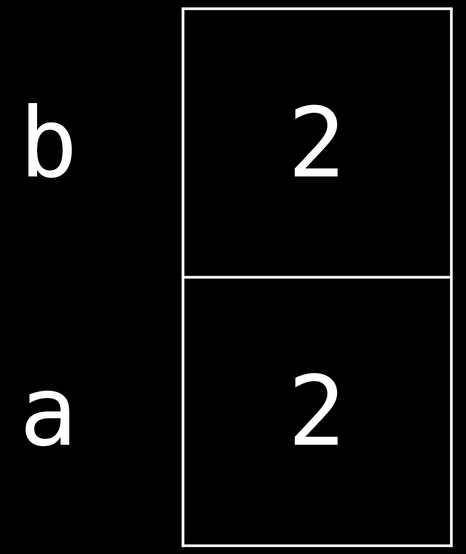
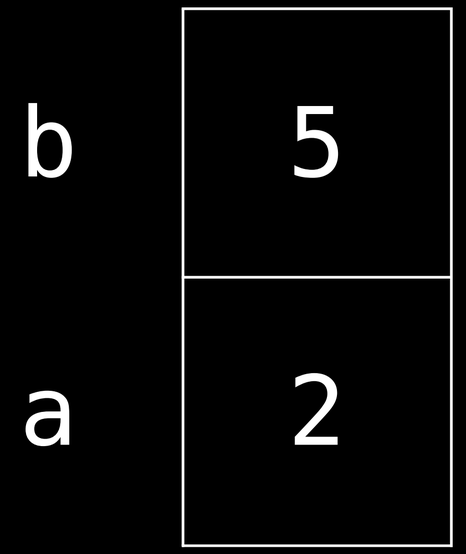
int a = 1;
a = b;
b = 5;
```



Variables

```
int b;
b = 2;
int a = 1;
a = b;
b = 5;
```



Types of variables

```
bool                              true, false
char     'a', 'b', '1', '!', ' ', '\n', ...
int                          -1, 0, 1, 2, ...
double                  -1.5, 1.0, 3.14, ...
string    "hello", "EECS 183", "a", "", ...
```

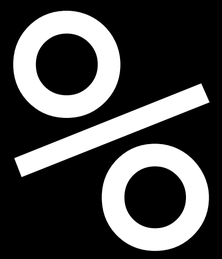
```
int elligence;
string cheese;
double speed;
```

Escape sequences

`\n` `\t` `\'` `\"` `\\` ...

Operators

```
+ - * / % =
```

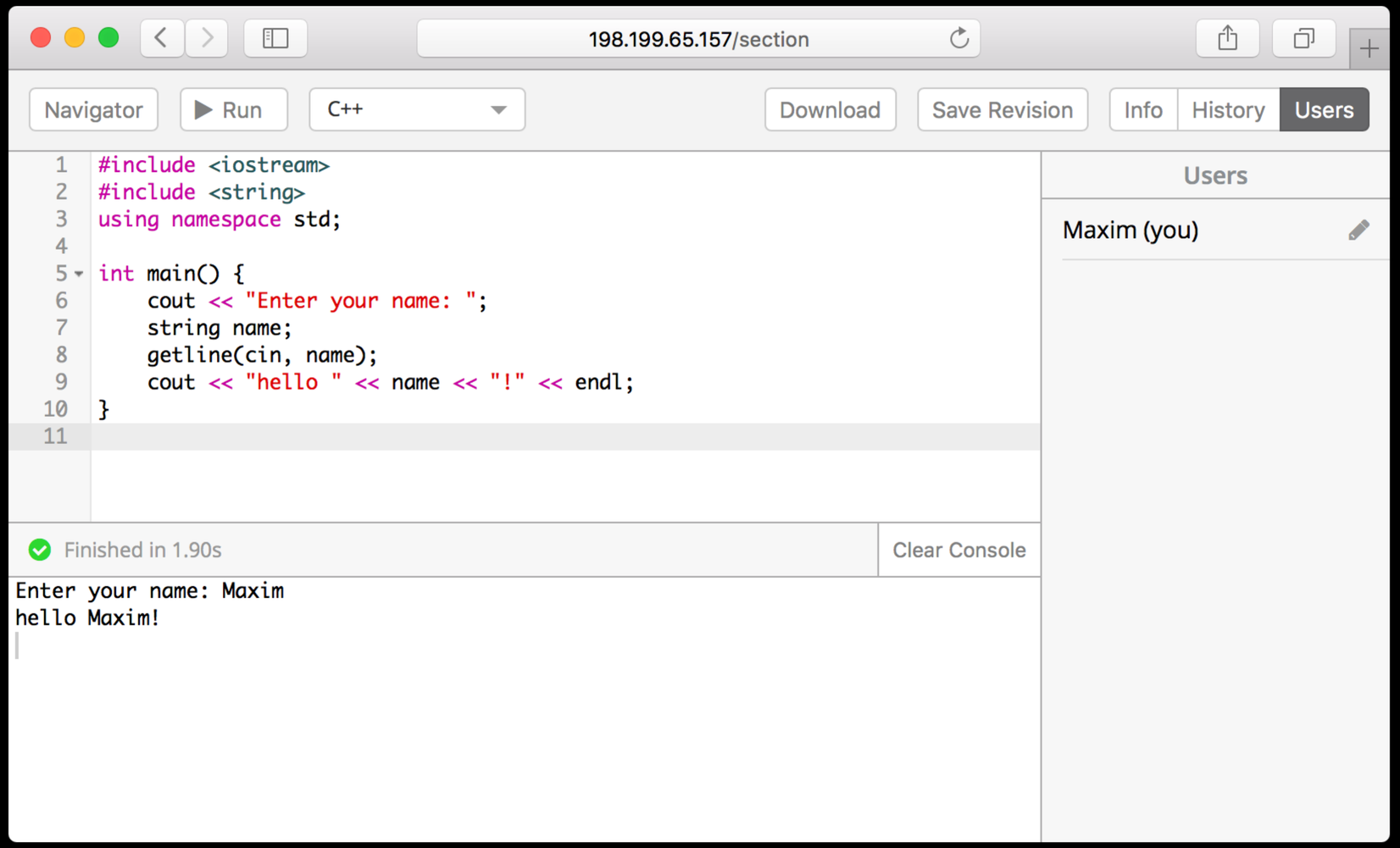


I/O (input/output)

```
#include <iostream>
using namespace std;

int main() {
    cout << "Please give me an int " << endl;
    int n;
    cin >> n;
    cout << "Thanks for the " << n << "!" << endl;
}
```

runway.maximal.io



Percentages

Ask the user for a numerator, ask the user for a denominator and print the fraction as a percent.

```
Numerator: 1
Denominator: 5
20%
```

Please go to `m.socrative.com` (room eecs183)

Answer this for Question 3:

A. Name five data types in C++.

B. What does `\"` do?

See you next week!

to be continued…