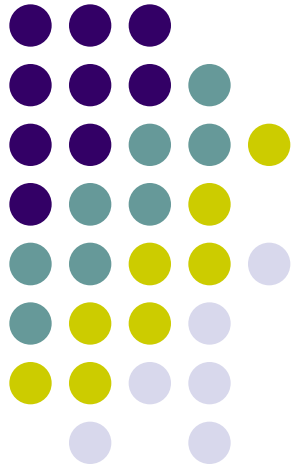
CS 460

Programming Languages

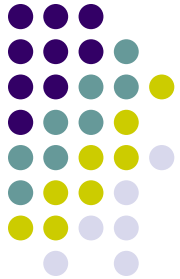
Fall 2023

Dr. Watts

(21 August 2023)



Course Administration



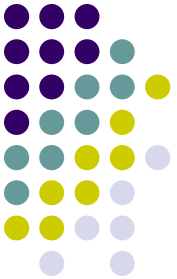
- Survey
- Course website
  http://watts.cs.sonoma.edu/cs460f23/

- BASIC
- FORTRAN
- Pascal
- COBOL
- BPL
- Audit Reporter
- RPG
- JCL
- SNOBOL
- APL

- ALGOL
- BAL
- SAS
- SPSS
- Ada
- LISP
- C
- Logo
- QBasic
- C++

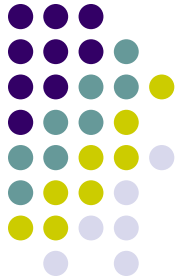
- MFC
- HTML
- Scheme
- Java
- Action Script
- C#
- XNA
- Objective C
- SVG
- Python

Syllabus & Schedule



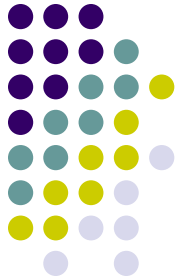
- http://watts.cs.sonoma.edu/cs460f23/Syllabus.pdf
- http://watts.cs.sonoma.edu/cs460f23/Schedule.pdf

Programming Language



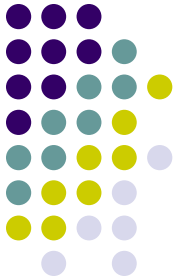
- What is a Programming Language?
- Why do we use Programming Languages?
- What is your favorite Programming Language?

What is a Programming Language?



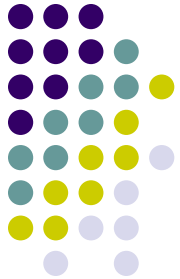
- Machine language
- Assembly language
- High level languages

What are the components of a Programming Language?



- “Words” - lexemes
- “Use of words” - grammar
- “Meaning of words” - semantics

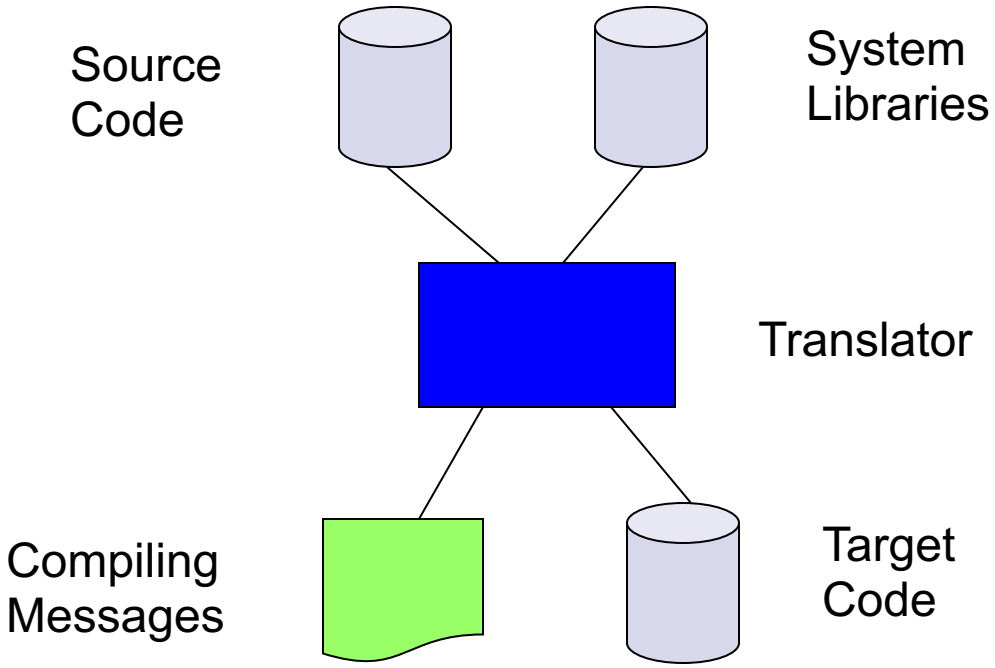
The compilation process



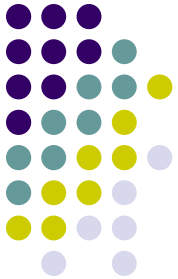
- Input – a human readable source program
  - Text file
  - Conforms to a specific programming language
- Output – a machine readable target program
  - A “binary” file
  - Conforms to a specific machine architecture

Language Translation

System Libraries



Phases of Compilation

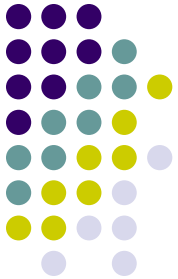


- Lexical analysis
- Syntactical analysis
- Semantic analysis
- Intermediate code generation
- Optimization
- Target code generation

Lexical Analysis

```
int
25.5
;
```

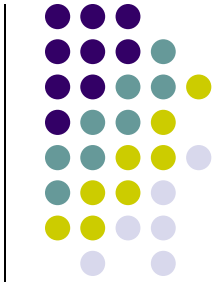
A C++ Program



```
int main ()
{
        std::cout << "Hello World" << std::endl;
        return 0;
}
```

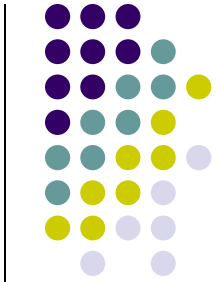
```
int main(){std::cout<<"Hello World"<<std::endl;return 0;}
```

Language Design



- Key (reserved) words
- Symbols
- Literals
- User defined names

Exercise 1 Posted



Sonoma State University
Computer Science Department
CS 460 – Fall 2023 – Watts

Exercise 1

(Due dates: 23 August 2023 and 29 August 2023)

For **Exercise 1 Part A,** you are to familiarize yourself with our course website: http://watts.cs.sonoma.edu/cs460f23/ and read the course syllabus.

Date Due: Tuesday, 23 August 2023, 11:59 pm.

For **Exercise 1 Part B,** you will be refreshing your C++ programming skills and using the course submission system.

1. Using an IDE or editor of your choice, write a well documented and formatted C++ program to solve the problem (Change Back) described in the specification at the end of this document.

2. If necessary, upload your program to your blue.cs.sonoma.edu account. Name the single file containing your code *lastname*E1b.cpp.

3. Compile your program using the g++ compiler. Test your program using input files of your choice.

4. Copy your .cpp file to the course dropbox: ~tiawatts/cs460drop and check the submissions page to make sure that your file was properly submitted. Within 10 minutes, you should receive an email from me containing the results of the submission script's actions.

Date Due: Tuesday, 29 August 2023, 11:59 pm.