

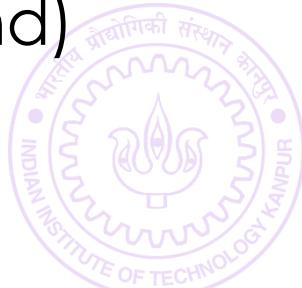
# Learning to Speak C

ESC101: Foundations of Computing

Purushottam Kar

# Announcements

- Website updates
  - Link to Hindi Lectures and websites for practice/challenge added
  - Slides for Monday lecture added
- Small changes in evaluation policy (see website)
  - Number of minor quizzes reduced ☺
  - Bonus/practice problems introduced
  - All quizzes, exams, labs will be open handwritten notes
  - No photocopies, printouts, electronic material (penalty if found)
- ESC101 sections are only for ESC101 for now
  - Trying our best to make sure sections same for all courses



# Announcements

- Prutor availability
  - During lab hours, only in NCL labs
  - Outside lab hours, hostels, CC, NCL etc (NCL open till 2AM ☺)
- Languages: C and maybe Python at the end
- Advice for protecting yourself from unfair blame
  - Do not share your CC password with anybody
  - Logout from Prutor **AND** lock/logout NCL computer before leaving
  - Not locking/logging out allows intruders to hack your CC account
  - Bulk copy-paste on Prutor may set off alert for copying
  - Don't worry, we will not blame you without first asking you



# New Course Admin



**Umair Z. Ahmed (Prutor Lead)**

Co-creator of Prutor  
Hindi, English



# The C Language

Name suggests it is a “language” like Bengali, Tamil  
Who speaks this language?

Introducing Mr. C Compiler

Other pet names: Compiler, Prutor, Computer

Will warn us if we are speaking C language wrong

Will help us correct our mistakes as well

Our friend but is very strict about rules

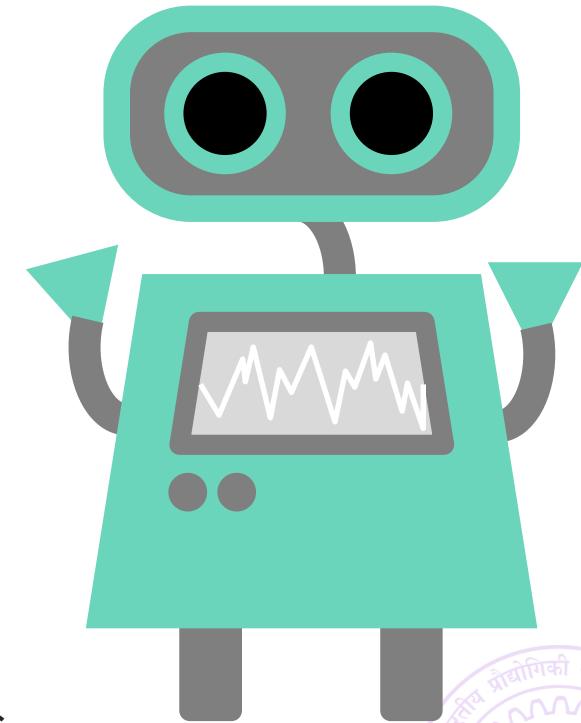
You are going to learn a new language

Be patient at the beginning

Some things may seem unfamiliar, strange for few days

Will get used to these very quickly

Best way to learn a new language – speak it and practice!



# The need for programming

Computer usage is everywhere

Engineering (civil, chemical), Sciences, Economics, AI

<https://www.youtube.com/watch?v=nKlu9yen5nc>

Even artists, comedians need to code ☺

<https://www.youtube.com/watch?v=EFwa5Owp0-k>

Be prepared for the future – job markets changing rapidly

People who can code often deal with problems in day to day life in more efficient manner

I already know how to code (some other language)

Do well in the first few weeks and use advanced track, bonus problems

I have no programming experience

This course is meant exactly for you

If you work with us, you will finish this course as an expert programmer



# My first C Program!

- How to speak with Mr. Compiler (in his language C)
- How to get him to speak our language (English)
- How to ask Mr. Compiler to add two numbers



# Adding two numbers

8



# Adding two numbers

8

**HOW WE USUALLY SPEAK TO A HUMAN**



# Adding two numbers

8

**HOW WE USUALLY SPEAK TO A HUMAN**



# Adding two numbers

8

**HOW WE USUALLY SPEAK TO A HUMAN**

Hello



# Adding two numbers

## HOW WE USUALLY SPEAK TO A HUMAN

Hello  
a is a variable.



# Adding two numbers

8

## HOW WE USUALLY SPEAK TO A HUMAN

Hello

a is a variable.

b is another variable.



# Adding two numbers

## HOW WE USUALLY SPEAK TO A HUMAN

Hello

a is a variable.

b is another variable.

a = 5.



# Adding two numbers

## HOW WE USUALLY SPEAK TO A HUMAN

Hello

a is a variable.

b is another variable.

a = 5.

b = 4.



# Adding two numbers

8

## HOW WE USUALLY SPEAK TO A HUMAN

Hello

a is a variable.

b is another variable.

a = 5.

b = 4.

Please add them.



# Adding two numbers

8

## HOW WE USUALLY SPEAK TO A HUMAN

Hello

a is a variable.

b is another variable.

a = 5.

b = 4.

Please add them.

Goodbye



# Adding two numbers

**HOW WE MUST SPEAK TO MR. COMPILER**

**HOW WE USUALLY SPEAK TO A HUMAN**

Hello

a is a variable.

b is another variable.

a = 5.

b = 4.

Please add them.

Goodbye



# Adding two numbers

**HOW WE MUST SPEAK TO MR. COMPILER**

**HOW WE USUALLY SPEAK TO A HUMAN**

Hello  
a is a variable.  
b is another variable.  
 $a = 5.$   
 $b = 4.$   
Please add them.  
Goodbye



# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

```
int main(){
```

## HOW WE USUALLY SPEAK TO A HUMAN

Hello  
a is a variable.  
b is another variable.  
a = 5.  
b = 4.  
Please add them.  
Goodbye



# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

```
int main(){  
    int a;
```

## HOW WE USUALLY SPEAK TO A HUMAN

Hello  
a is a variable.  
b is another variable.  
a = 5.  
b = 4.  
Please add them.  
Goodbye



# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

```
int main(){  
    int a;  
    int b;
```

## HOW WE USUALLY SPEAK TO A HUMAN

Hello  
a is a variable.  
b is another variable.  
a = 5.  
b = 4.  
Please add them.  
Goodbye



# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

```
int main(){  
    int a;  
    int b;  
    a = 5;
```

## HOW WE USUALLY SPEAK TO A HUMAN

Hello  
a is a variable.  
b is another variable.  
a = 5.  
b = 4.  
Please add them.  
Goodbye



# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

```
int main(){  
    int a;  
    int b;  
    a = 5;  
    b = 4;
```

## HOW WE USUALLY SPEAK TO A HUMAN

Hello  
a is a variable.  
b is another variable.  
a = 5.  
b = 4.  
Please add them.  
Goodbye



# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

```
int main(){  
    int a;  
    int b;  
    a = 5;  
    b = 4;  
    a + b;
```

## HOW WE USUALLY SPEAK TO A HUMAN

Hello  
a is a variable.  
b is another variable.  
a = 5.  
b = 4.  
Please add them.  
Goodbye



# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

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int main(){  
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    return 0;
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## HOW WE USUALLY SPEAK TO A HUMAN

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Goodbye



# Adding two numbers

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int main(){  
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# Adding two numbers

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    a + b;
```

```
    return 0;
```

```
}
```

## HOW WE USUALLY SPEAK TO A HUMAN

Hello

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b = 4.

Please add them.

Goodbye



# Adding two numbers

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    a + b;
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    return 0;
```

```
}
```

## HOW WE USUALLY SPEAK TO A HUMAN

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b = 4.

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# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

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    a = 5;
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    a + b;
```

```
    return 0;
```

```
}
```

## HOW WE USUALLY SPEAK TO A HUMAN

Hello

a is a variable.

b is another variable.

a = 5.

b = 4.

; is like a  
fullstop in C

Please add them.

Goodbye



# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

```
int main(){
```

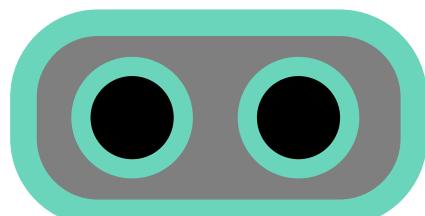
```
    int a;
```

```
    int b;
```

```
    a = 5;
```

```
    b = 4;
```

```
    a + b;
```



```
    return 0;
```

```
}
```

## HOW WE USUALLY SPEAK TO A HUMAN

Hello

a is a variable.

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a = 5.

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Please add them.

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# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

```
int main(){
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```
    int a;
```

```
    int b;
```

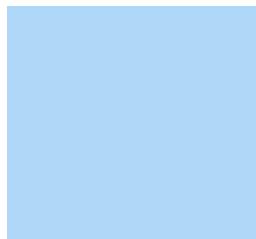
```
    a = 5;
```

```
    b = 4;
```

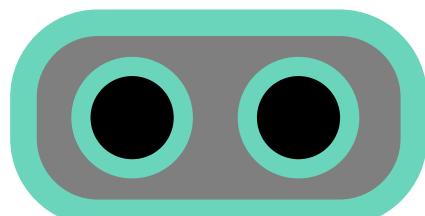
```
    a + b;
```

```
    return 0;
```

```
}
```



a



## HOW WE USUALLY SPEAK TO A HUMAN

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b is another variable.

a = 5.

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; is like a  
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Please add them.

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# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

```
int main(){
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```
    int a;
```

```
    int b;
```

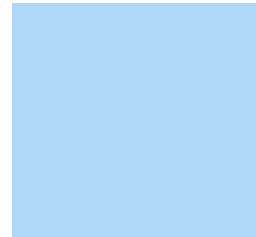
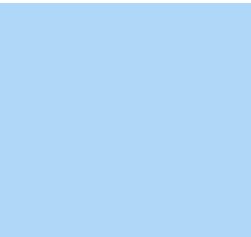
```
    a = 5;
```

```
    b = 4;
```

```
    a + b;
```

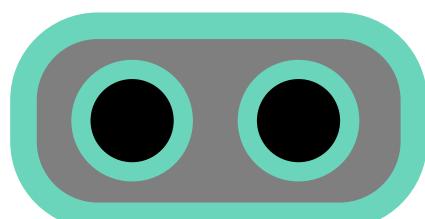
```
    return 0;
```

```
}
```



a

b



## HOW WE USUALLY SPEAK TO A HUMAN

Hello

a is a variable.

b is another variable.

a = 5.

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; is like a  
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Please add them.

Goodbye



# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

```
int main(){
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    int a;
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```
    int b;
```

```
    a = 5;
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```
    b = 4;
```

```
    a + b;
```

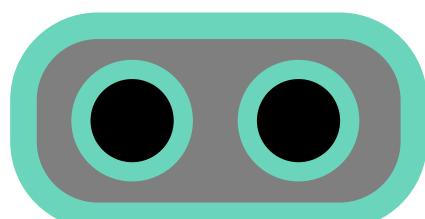
```
    return 0;
```

```
}
```

5

a

b



## HOW WE USUALLY SPEAK TO A HUMAN

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Please add them.

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# Adding two numbers

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b = 4;
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a + b;
```

```
return 0;
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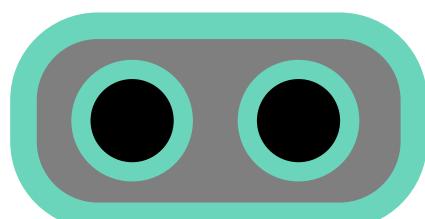
```
}
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5

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4

b



## HOW WE USUALLY SPEAK TO A HUMAN

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b = 4;
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a + b;
```

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return 0;
```

```
}
```

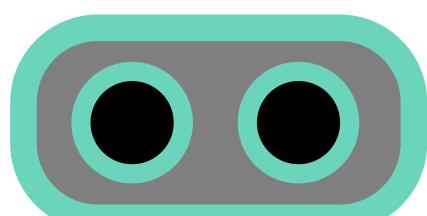
5

a

4

b

9



## HOW WE USUALLY SPEAK TO A HUMAN

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a is a variable.

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a = 5.

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; is like a  
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Please add them.

Goodbye



# Adding two numbers

## HOW WE MUST SPEAK TO MR. COMPILER

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int b;
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a = 5;
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```
b = 4;
```

```
a + b;
```

```
return 0;
```

```
}
```

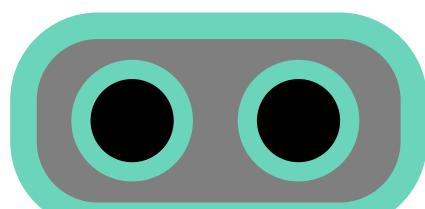
5

4

a

b

9



What should I  
do with this 9 😞

## HOW WE USUALLY SPEAK TO A HUMAN

Hello

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a = 5.

b = 4.

; is like a  
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Please add them.

Goodbye



# Mr. C Compiler speaks to us!

38



# Mr. C Compiler speaks to us!

38

**HOW WE USUALLY SPEAK TO A HUMAN**



# Mr. C Compiler speaks to us!

38

## HOW WE USUALLY SPEAK TO A HUMAN

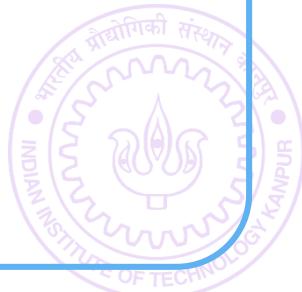


# Mr. C Compiler speaks to us!

38

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?



# Mr. C Compiler speaks to us!

38

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?  
Hello



## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?

Hello

Please say “Hello” to me.



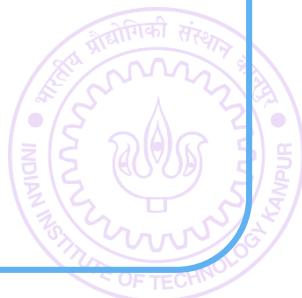
## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?

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Please say “Hello” to me.

Goodbye



# Mr. C Compiler speaks to us!

38

**HOW WE MUST SPEAK TO MR. COMPILER**

**HOW WE USUALLY SPEAK TO A HUMAN**

Can you speak English?

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Please say “Hello” to me.

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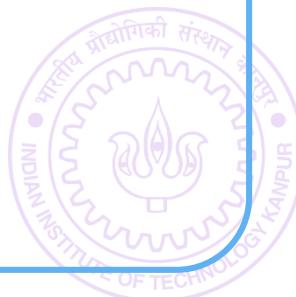
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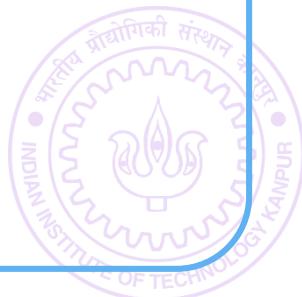
38

## HOW WE MUST SPEAK TO MR. COMPILER

```
#include<stdio.h>
```

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?  
Hello  
Please say “Hello” to me.  
Goodbye



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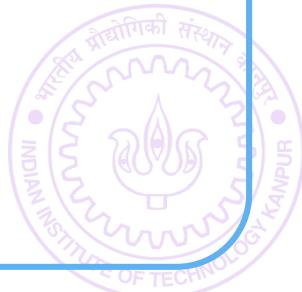
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## HOW WE MUST SPEAK TO MR. COMPILER

```
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## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?  
Hello  
Please say “Hello” to me.  
Goodbye



# Mr. C Compiler speaks to us!

38

## HOW WE MUST SPEAK TO MR. COMPILER

```
#include<stdio.h>  
  
int main(){  
    printf("Hello");
```

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?  
Hello  
Please say “Hello” to me.  
Goodbye



# Mr. C Compiler speaks to us!

38

## HOW WE MUST SPEAK TO MR. COMPILER

```
#include<stdio.h>  
  
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## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?  
Hello  
Please say “Hello” to me.  
Goodbye



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## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?  
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Can you speak English?

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Please say “Hello” to me.

Goodbye

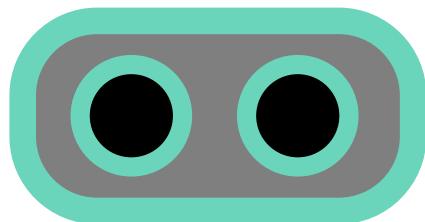


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## HOW WE MUST SPEAK TO MR. COMPILER

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## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?

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Please say “Hello” to me.

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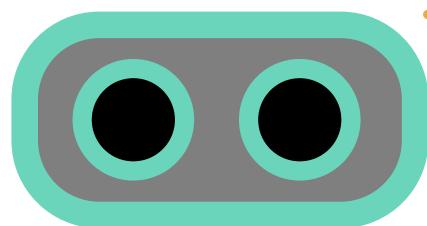


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Hello

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?

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Goodbye

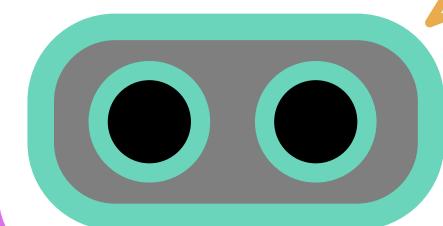


# Mr. C Compiler speaks to us!

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## HOW WE MUST SPEAK TO MR. COMPILER

```
#include<stdio.h>  
  
int main(){  
    printf("Hello");  
    return 0;  
}
```



I like to be told  
beforehand  
what all you  
are going to  
ask me to do!

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?

Hello

Please say “Hello” to me.

Goodbye



# Mr. C Compiler speaks to us!

58



# Mr. C Compiler speaks to us!

58

## HOW WE USUALLY SPEAK TO A HUMAN



# Mr. C Compiler speaks to us!

58

## HOW WE USUALLY SPEAK TO A HUMAN



# Mr. C Compiler speaks to us!

58

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?



# Mr. C Compiler speaks to us!

58

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?  
Hello



# Mr. C Compiler speaks to us!

58

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?  
Hello  
a is a variable.



# Mr. C Compiler speaks to us!

58

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?

Hello

a is a variable.

a = 5.



## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?

Hello

a is a variable.

a = 5.

Please tell me value of a.



# Mr. C Compiler speaks to us!

58

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?

Hello

a is a variable.

a = 5.

Please tell me value of a.

Goodbye



# Mr. C Compiler speaks to us!

58

**HOW WE MUST SPEAK TO MR. COMPILER**

**HOW WE USUALLY SPEAK TO A HUMAN**

Can you speak English?

Hello

a is a variable.

a = 5.

Please tell me value of a.

Goodbye



# Mr. C Compiler speaks to us!

58

## HOW WE MUST SPEAK TO MR. COMPILER

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?

Hello

a is a variable.

$a = 5$ .

Please tell me value of a.

Goodbye



# Mr. C Compiler speaks to us!

58

## HOW WE MUST SPEAK TO MR. COMPILER

```
#include<stdio.h>
```

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?

Hello

a is a variable.

a = 5.

Please tell me value of a.

Goodbye



# Mr. C Compiler speaks to us!

58

## HOW WE MUST SPEAK TO MR. COMPILER

```
#include<stdio.h>  
int main(){
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## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?  
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a is a variable.  
a = 5.  
Please tell me value of a.  
Goodbye



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## HOW WE MUST SPEAK TO MR. COMPILER

```
#include<stdio.h>  
  
int main(){  
  
    int a;
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## HOW WE USUALLY SPEAK TO A HUMAN

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#include<stdio.h>  
  
int main(){  
  
    int a;  
  
    a = 5;
```

## HOW WE USUALLY SPEAK TO A HUMAN

Can you speak English?  
Hello  
a is a variable.  
a = 5.  
Please tell me value of a.  
Goodbye



# Mr. C Compiler speaks to us!

58

## HOW WE MUST SPEAK TO MR. COMPILER

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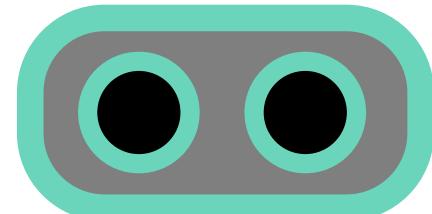


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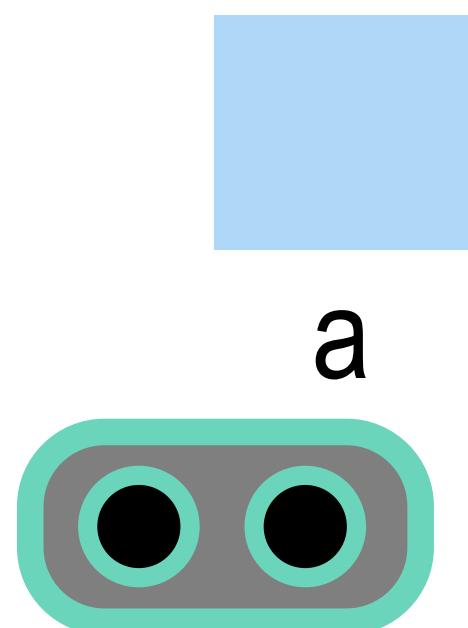


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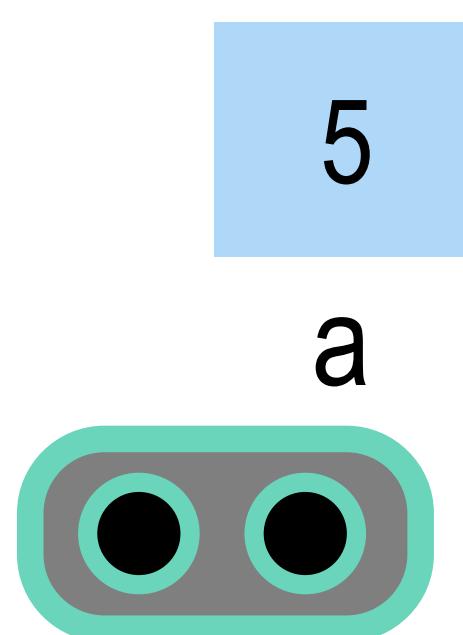


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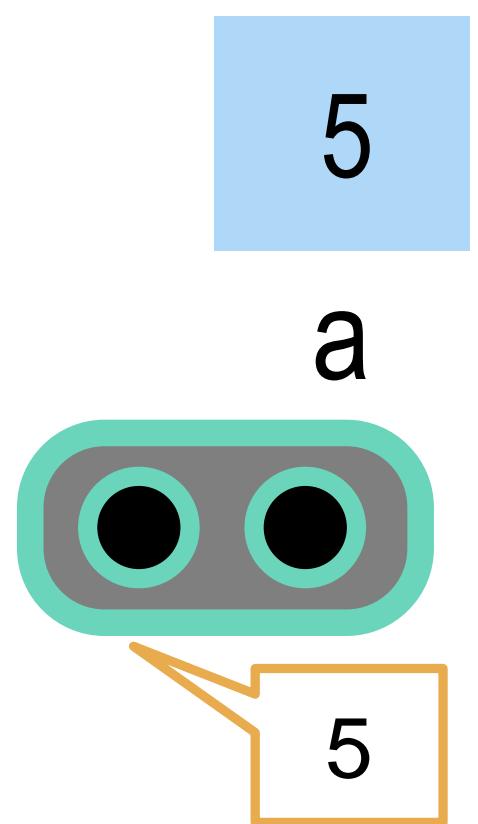


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