

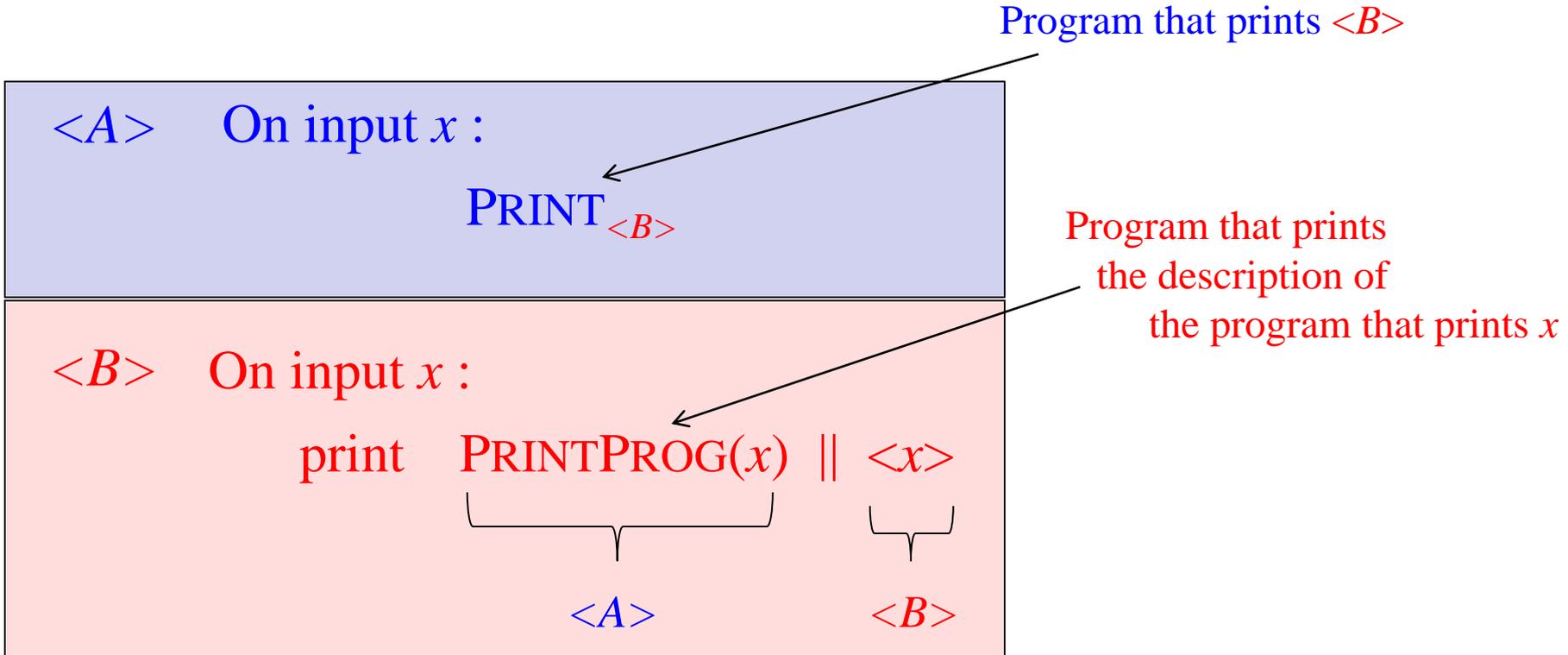
# Programs that reference their own descriptions

ECS 120 – 5/24/2013



Print out this sentence.

Print out two copies of the following, the second one in quotes:  
“Print out two copies of the following, the second one in quotes:”



```
char*f="char*f=%c%s%c;main(){printf(f,34,f,34,10);}%c";  
main(){printf(f,34,f,34,10);}
```

- A self-replicating program (a “quine” (pronounced “kwine”))
- Using format `f` in a `printf` statement, it prints `f`
  - Yow!
- **Lesson:** you can write (weird) programs that
  - Know their own description, and
  - Use that description in any arbitrary way. In effect,
  - Can say: “obtain your own description” in pseudocode

# Ken Thompson: *Reflections on Trusting Trust* (1984)



**login.c** – Trojan login

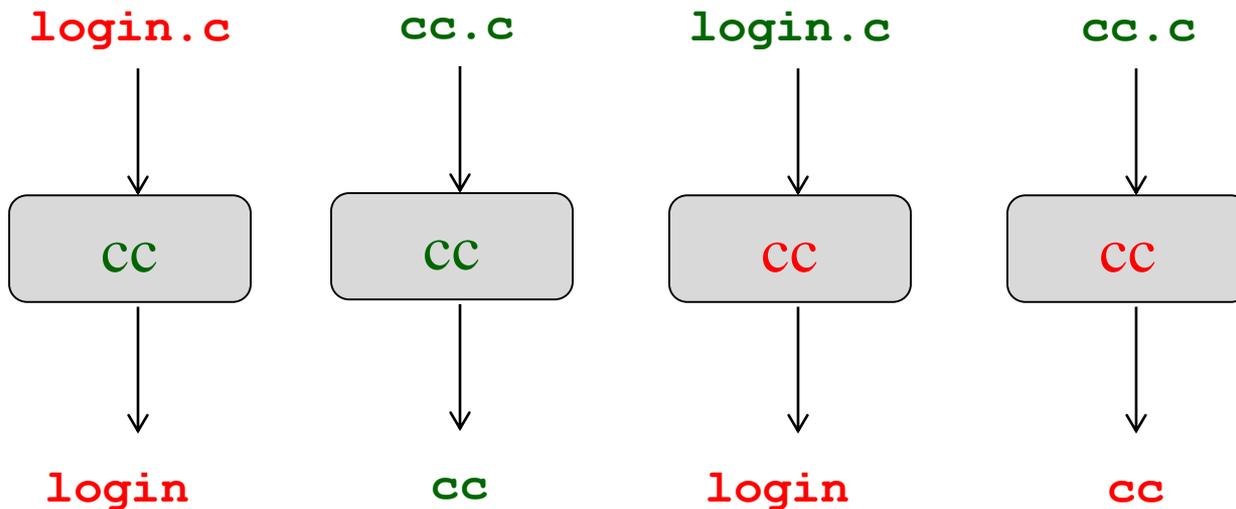
Like real **login.c** but let's me on to **any account** if I give password **LetMeIn!6!**

**cc.c** – Trojan C compiler

Like the real C compiler **cc.c** except:

- Compile **login.c** to **login = cc(login.c)**
- Compile **cc.c** to **cc = cc(cc.c)** ←

How does  
**cc.c** “know” **cc.c**?  
See “Lesson” !



1. Write **login.c** and **cc.c**
2. Compile with **cc** to **login** and **cc**
3. Throw away **login.c** and **cc.c**
4. However often you recompile **login.c** and **cc.c**, you get **login** and **cc**