IN2: Trusting Trust

Introduction to Compilers

CMPT 379: Compilers

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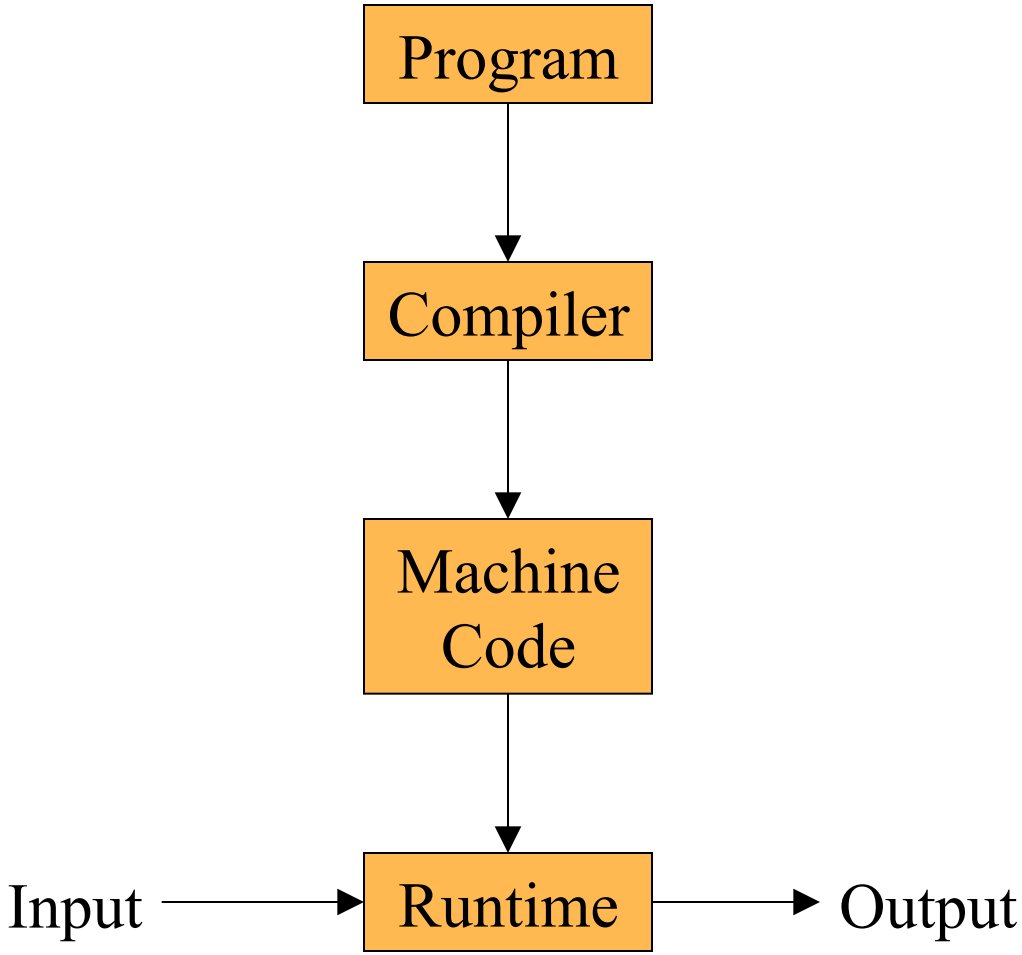
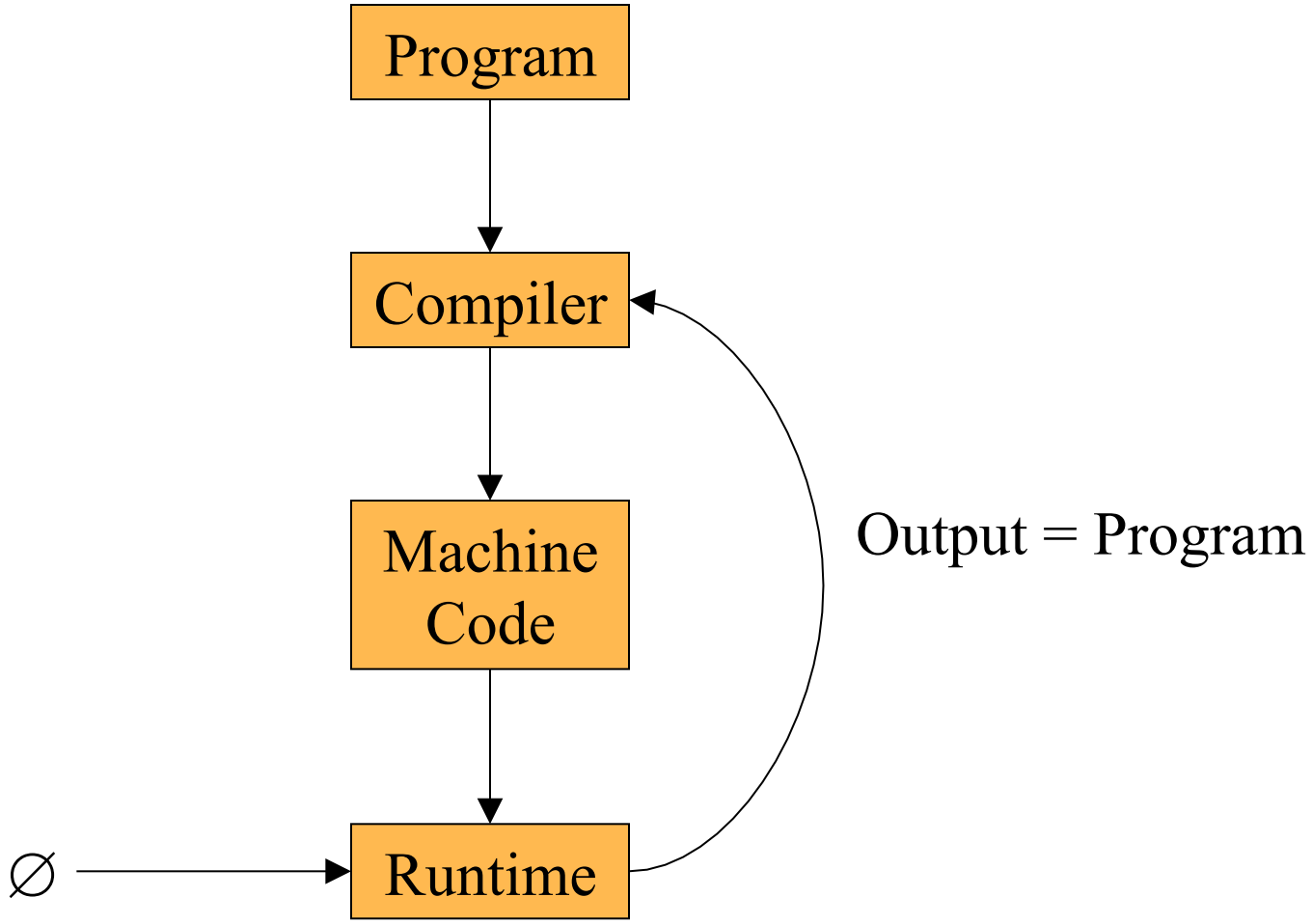
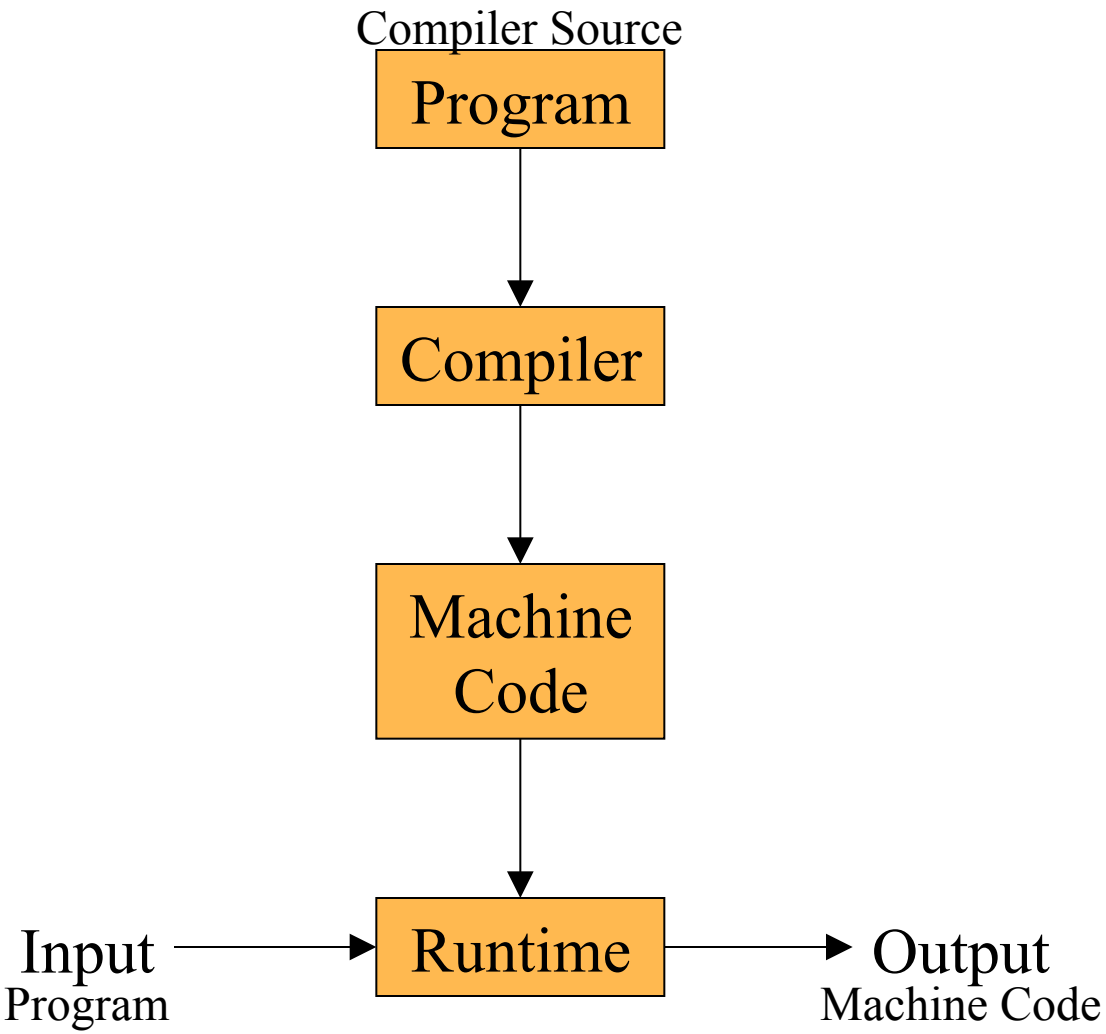
anoopsarkar.github.io/compilers-class

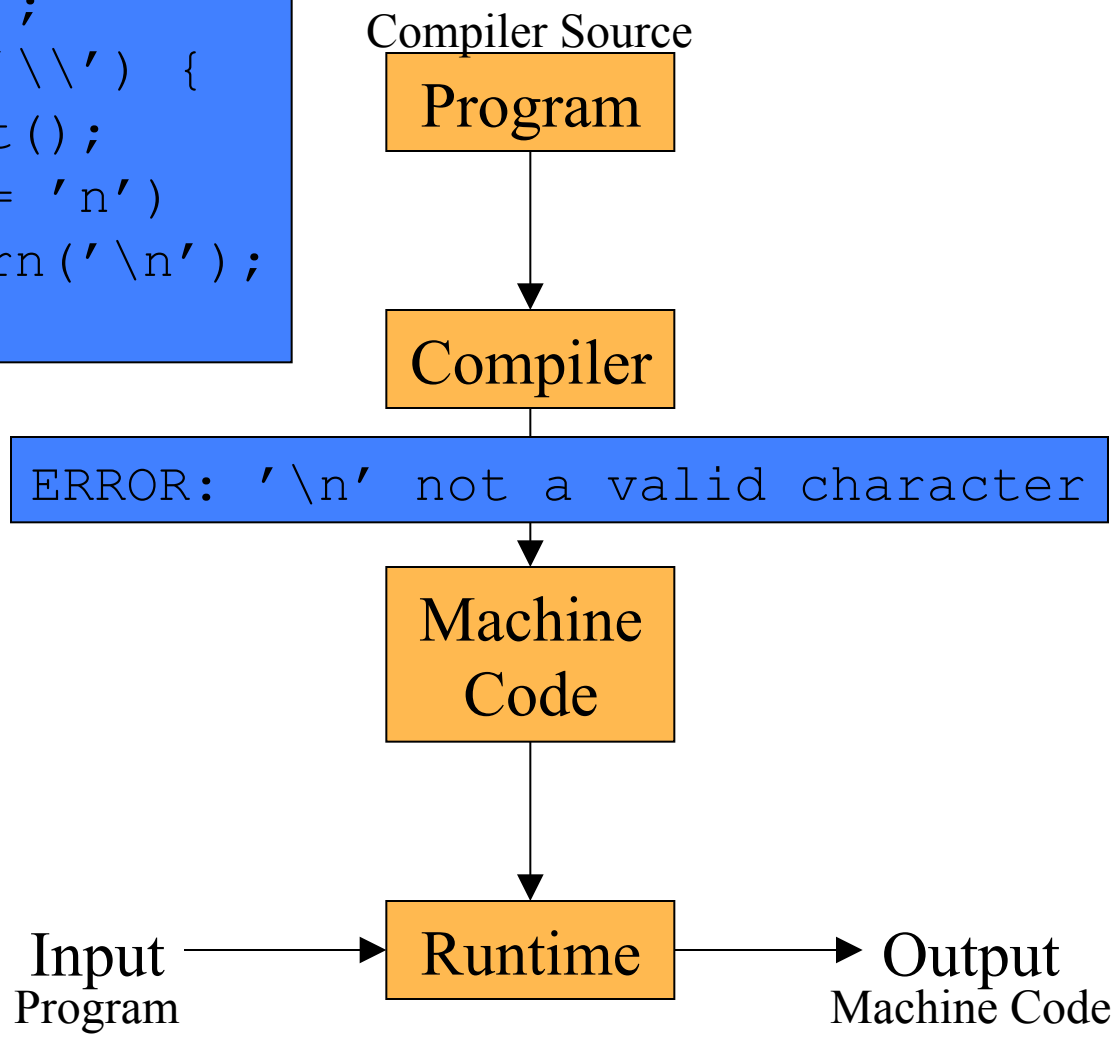

Program
Compiler
Machine Code
Input
Runtime
Output

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



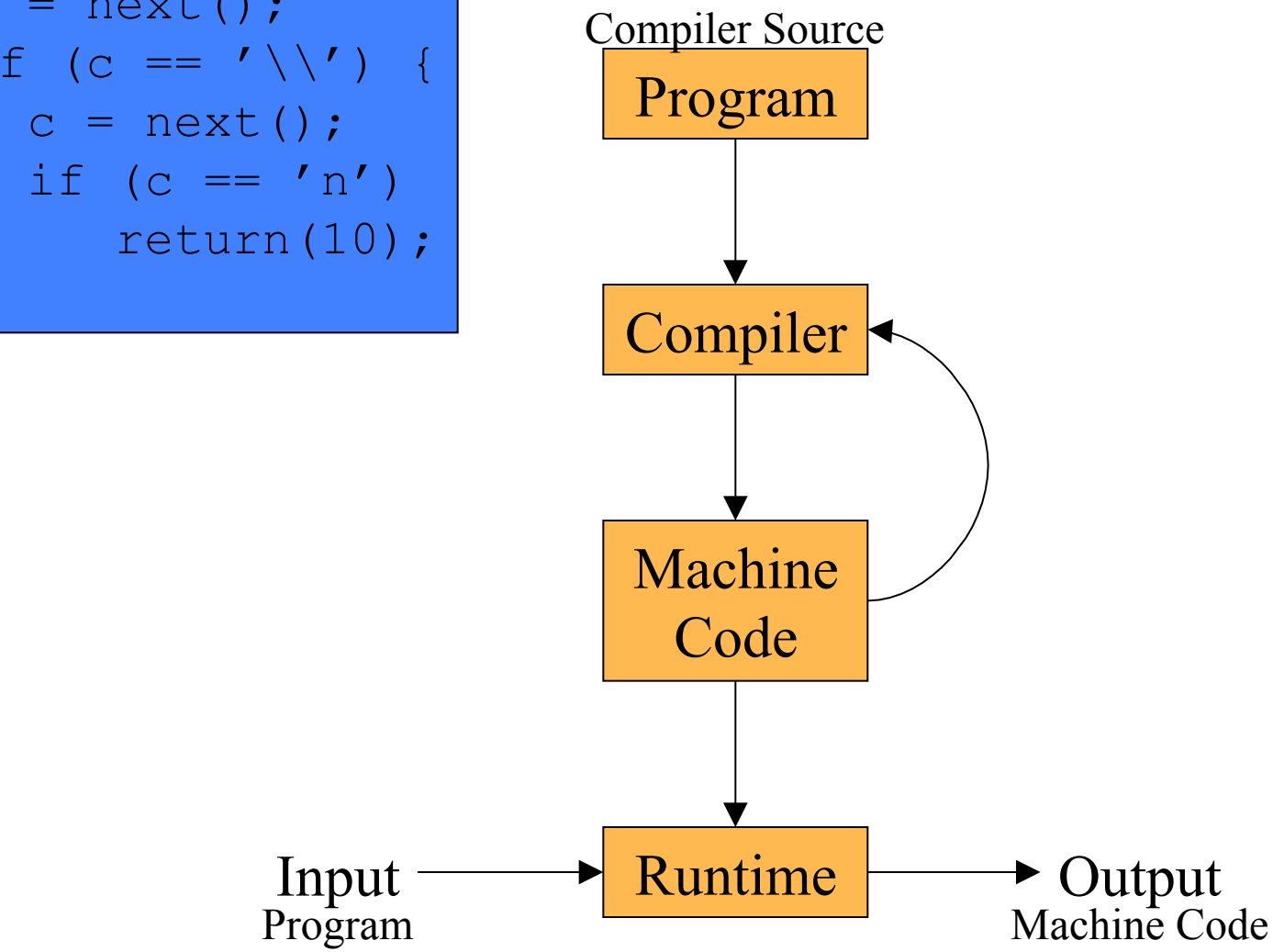

Compiler Source
Program
Compiler
Machine Code
Input
Program
Runtime
Output
Machine Code

```
c = next();
if (c == '\\') {
  c = next();
  if (c == 'n')
    return('\n');
}
```



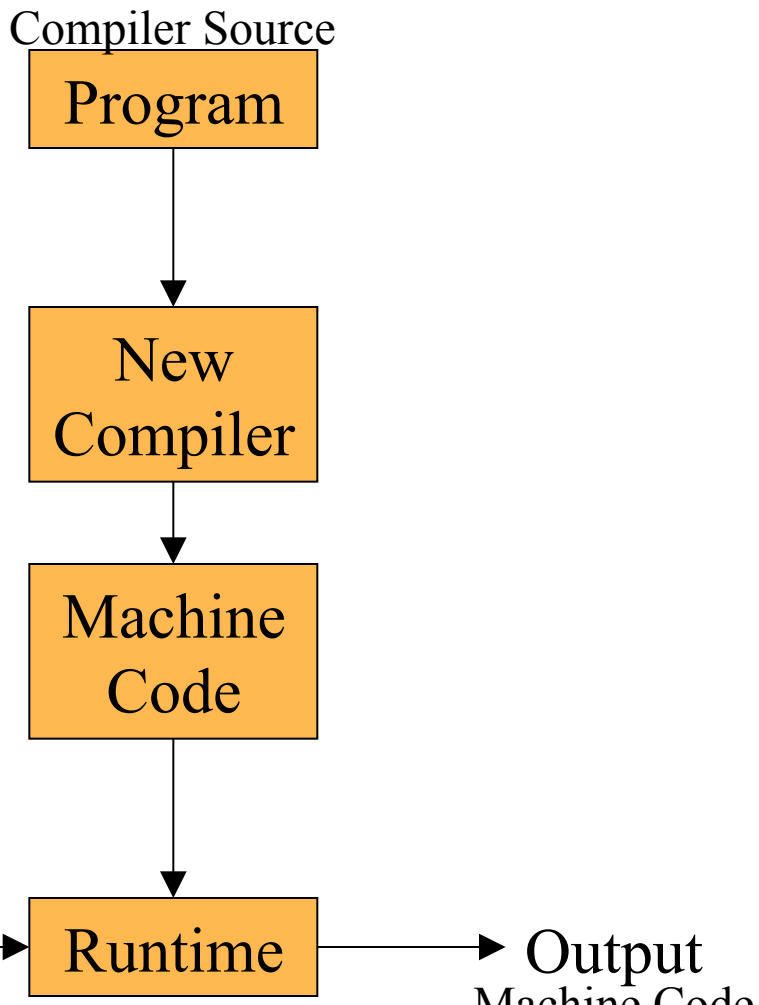

```
printf("hello world\n")
```

```
c = next();
if (c == '\\') {
  c = next();
  if (c == 'n')
    return(10);
}
```



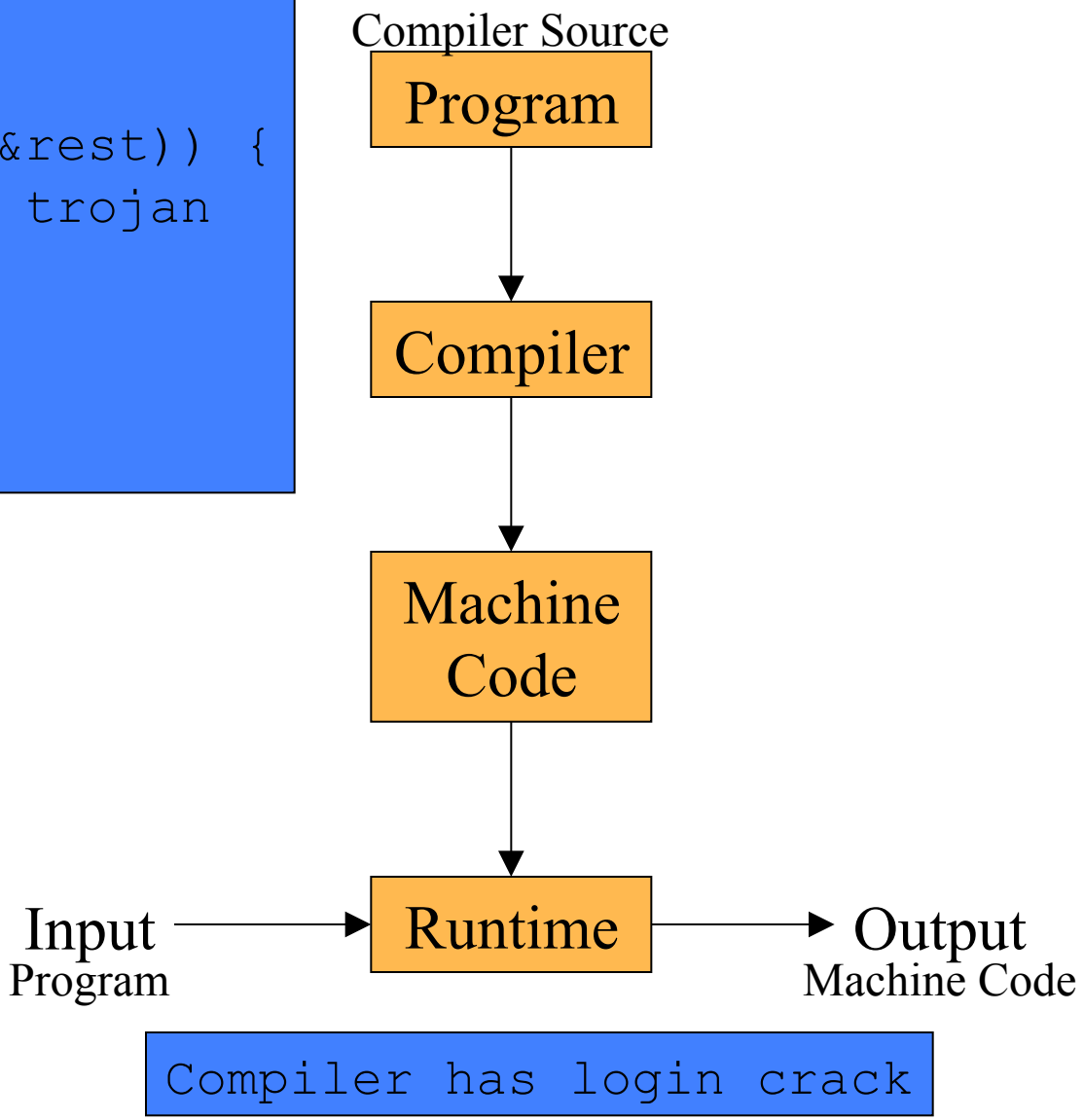

```
printf("hello world\n")
```

```
c = next();
if (c == '\\') {
  c = next();
  if (c == 'n')
    return('\n');
}
```

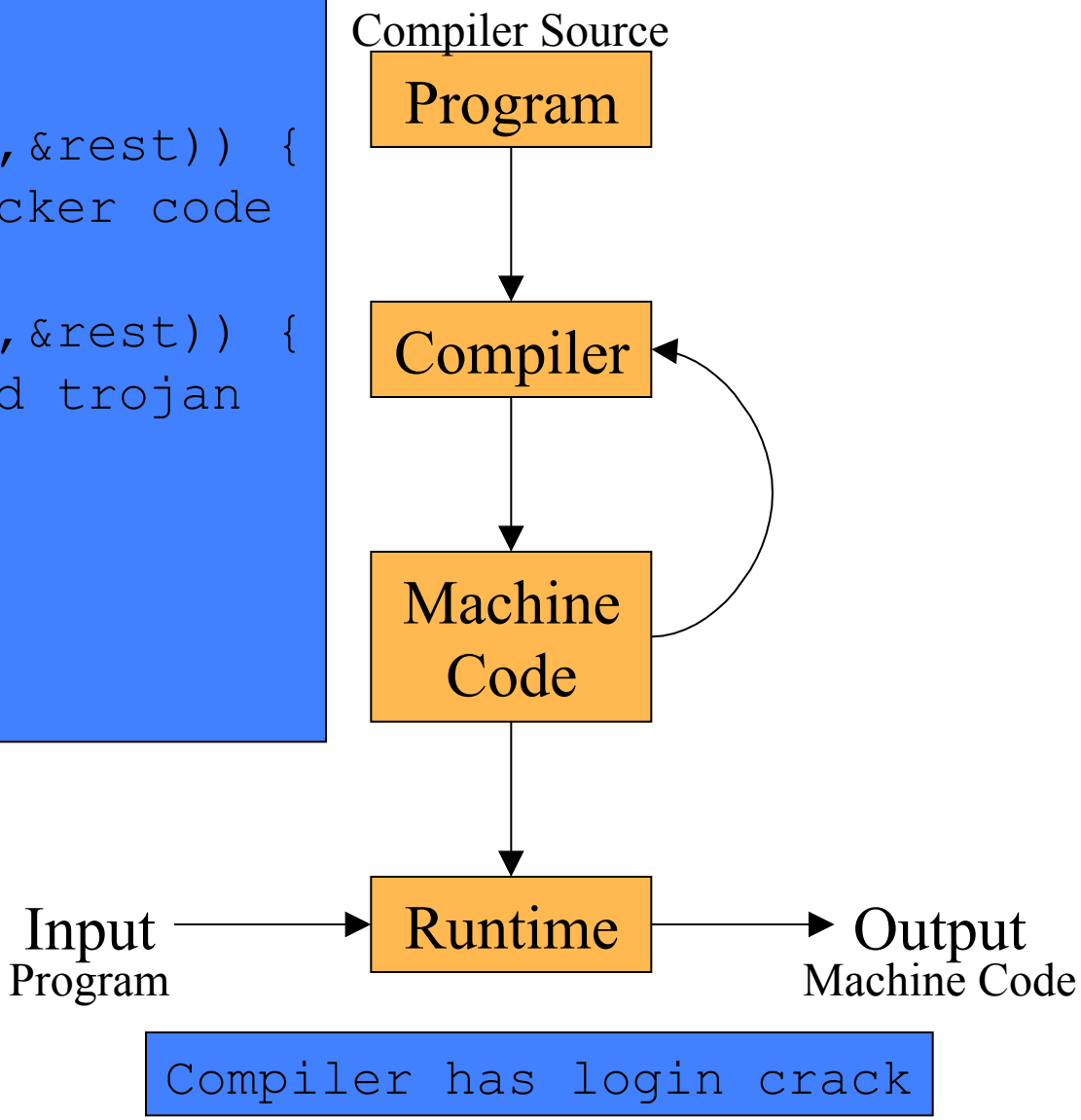



```
printf("hello world\n")
```

```
compile(char *s)
{
  if(match(s,"login(",&rest)) {
    // add root passwd trojan
    compile(rest);
  }
  …
}
```



```
compile(char *s)
{
  if(match(s,"compile(",&rest)) {
    // insert login cracker code
    compile("
    if(match(s,"login(",&rest)) {
      // add root passwd trojan
      compile(rest);");
  }
  compile(rest);
  …
}
```



```
compile(char *s)
{
  // standard compiler code
  // no login crack
  …
}
```

Reflections on Trusting Trust,
Ken Thompson.
CACM 27(8), pp. 761-763, 1984.