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A BRIEF HISTORY OF COMMUNICATIONS SECURITY











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THE PROGRAMMER

"Programming is hard" Donald Knuth

- Programmers not historically responsible for security.
- Programmers already have one hard job to do.

DEFENSIVE PROGRAMMING IS NOT ENOUGH

Defensive programming: "Write the program to cope with small disasters." [Kernighan and Plauger]

A C function with no error checking: void printMsg(FILE* file, char* msg) { fprintf(file, msg);

Crashes when file or msg is null.

```
Error checking added:
```

void printMsg(FILE* file, char* msg) {

```
if (file == NULL) {
```

logError("attempt to print to null file");

```
} else if (msg == NULL) {
```

logError("attempt to print null message");

```
} else {
```

```
fprintf(file, msg);
```

No more crashes. Fixed? Hint: AAA1_%08x.%08x.%08x.%08x.%08x.%n

THIS IS ENOUGH

Must also defend against format string attacks:

void printMsg(FILE* file, char* msg) {

if (file == NULL) {

logError("attempt to print to null file");

```
} else if (msg == NULL) {
```

logError("attempt to print null message");

} else {

fprintf(file, "%.128s", msg);

SOFTWARE QUALITY VS. SOFTWARE SECURITY

QUALITY

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- Cannot be bolted on
- Must be built in
- Does the program do what it's supposed to do?
- Will the users be happy?
- Are common cases smooth and easy?
- Will people pay for it?

SECURITY

- Cannot be bolted on
- Must be built in
- Does the program have "bonus" features?
- Will the attackers get what they want?
- Are there corner cases we haven't considered?
- What do we stand to lose?







Success is foreseeing failure.

R. M. Laters

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– Henry Petroski











Building Security In Maturity Model (BSIMM) http://www.bsi-mm.com



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