BULLETPROOF CODE (3)

Introduction To Regular Expressions

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OPERATORS AND META-CHARACTERS

- *x*

- ^ $ \ . * + ? ( ) [ ] { } |

  - \c

- .

- [*xyz*]

- [*a-z*]

- [^*xyz*]

- *xyz*

- $r_1 | r_2$

- r*

- r+

- r?

- r{n} r{n,}   r{m,n}

- (r)   (?:r)

C++ REGULAR EXPRESSION FUNCTIONS

- `smatch m;` (a special case of the general `match_results` class)
- `regex(const char* re)`
- `bool regex_match(string& t, regex& re)`
- `bool regex_match(string& t, smatch m, regex& re)`
- `string regex_replace(string& t, regex& re, string& format)`
- `bool regex_search(string t, regex& re)`
- `bool regex_search(string& t, smatch m, regex& re)`

ROLODEX VERSION 1: DELIMITERS

- Albert Einstein:Princeton, NJ:(456) 123-8765

- string name;
- getline(in, name, ':');
- string address;
- getline(in, address, ':');
- string phone;
- getline(in, phone, '\n');

ROLODEX VERSION 2: STRING STREAMS

```
string line;
getline(in, line);
if (line.length() == 0 || line[0] == '#')
    continue;
istringstream input(line);
getline(input, name, ':');
getline(input, address, ':');
getline(input, phone, '\n');
```

ROLODEX VERSION 3: REGULAR EXPRESSIONS

```
//if (! regex_match(line, regex(".+:.+:.+")) )


//if (! regex_match(line, regex("[^:]+:[^:]+:[^:]+")) )


if (! regex_match(line, regex("[^:]+(:[^:]+){2}")) )
    continue;
```

ROLODEX VERSION 3:
REGULAR EXPRESSIONS

```
//if (! regex_match(line, regex(".+:.+:.+")) )


//if (! regex_match(line, regex("[^:]+:[^:]+:[^:]+")) )


if (! regex_match(line, regex("[^:]+(:[^:]+){2}")) )
     continue;
```

ROLODEX VERSION 3: REGULAR EXPRESSIONS

```
//if (! regex_match(line, regex(".+:.+:.+")) )


//if (! regex_match(line, regex("[^:]+:[^:]+:[^:]+")) )


if (! regex_match(line, regex("[^:]+(:[^:]+){2}")) )
    continue;
```

CHECKBOOK VERSION 1: DELIMITERS

```
419:Dec 5:Hardware Store:47.89
Deposit:8/19/2006:-:150.00

double amount;
string type;

input >> amount;
if (type == "Deposit" || type == "deposit")
    balance += amount;
else
    balance -= amount;
```

CHECKBOOK VERSION 2: REGULAR EXPRESSIONS

```
419:Dec 5:Hardware Store:47.89

Deposit:8/19/2006:-:150.00


string re = "([Dd]eposit|[1-9][0-9]*):[^:]+:[^:]+:\\d*\\.\\d{2}";


if (! regex_match(entry, regex(re)))

    continue;
```