# Forth Strings

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# Project Description

- 10,000 people will be interviewed in a shopping mall over one-week (day, night, and weekends).

- Shoppers will be asked to provide their zipcode if they live in the US or their country if they live outside the US.

# Project Deliverables

- Provide a listing of number of people from each reported zipcode and country broken down by time (day, night, weekend) and location in the mall.

# Methods

- Use the Memopad function on a Palm Pilot to enter each shopper's zipcode or country (one per line) using either:
  - Graffiti
  - On-screen keyboard

- Separate files will be created for different times of the day and mall locations

# More Methods

- Use 2-digit codes for common countries

- Download resultant files to PC (using HotSync) for processing

- Results delivered in Excel spreadsheets

# Concerns

- Spaces in data – at beginning or end of line
- Multiple zipcodes or countries per line
- Large number of possible zipcodes (100,000)
- Tabs in lines
- Blank lines
- Misrecognition of 0, 1 (`oOiIl`)
- First line title
- Comment lines
- No closing crlf

# Programming Functionalities

- Read a text file line-by-line
- Recognize numbers (2 and 5-digits)
- Recognize non-numbers
  - Countries
  - Misrecognized numbers – convert to numbers
  - Titles
  - Comments
  - Other
- Increment zipcode counters
- Write text files
- Address concerns

# FPC Forth Primitives

- Sample file read code
- Block to Screen conversion utility
- Counted strings
- Pictured number formatting

# Counted Strings

- A counted string is data structure consisting of:
  - Count byte followed by ASCII text
- Termination options:
  - None
  - 0
  - Space
  - CR, LF
- Represented by an address pointing to the count byte

# Demo

- File read example program
- Counted string test words
- Counted string utilities
- Program operation

# File Read Example

```
: sample ( - )                \ Print the file whose name follows on the input line
      open                     \ open the file
      0.0 seek                 \ reset file pointer to start of file
      begin    lineread        \ read one line, return buffer address
            dup c@             \ check that line length is not 0
      while    cr count 2- type \ type the line without the trailing crlf
      repeat                   \ repeat until file is empty
      drop close        ;      \ close the file
```