Recap & Trivia

COMP 524: Programming Language Concepts
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How many programming languages are there in the HOPL database?

(What's the meaning of HOPL?)

Over 8500.
History of Programming Languages

Thursday, January 14, 2010

What was likely the first high-level programming language?

Who designed it?

Plankalkül (= program calculus), 1945. Work started in 1943 for PhD dissertation. Only published in 1972.

Conrad Zuse (Germany).

Included algorithms for sorting, graph connectivity and playing chess.

[But it was never implemented; Zuse's machines were destroyed in WW2]

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What is another name for Van Neumann computers?

Stored-program computers.

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What's the relationship between assembly and machine code?

A direct mapping; one-to-one correspondence.
Assembly is converted into machine code.

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Name three limitations of programming on the assembly level.

Hard to read and write for humans.
Not portable.
Error-prone due lack of checking.
(many others)

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What's the oldest high-level programming language still in common use?

Fortran.

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When was the initial Fortran report published?
Who is the principle author?
Who was her/his employer?

1954. John Backus. IBM.

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In which language is the following statement a legal expression?

`ADD YEARS TO AGE`

COBOL.

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Who is credited with the design of COBOL?

Grace Hopper.

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Which language is this?

```
((defmethod searcher ((prob problem))
  "Find a state that solves the search problem."
  (cond ((no-states-p prob) fail)
        ((goal-p prob) (current-state prob))
        (t (let ((current (pop-state prob)))
             (setf (problem-states prob)
                   (problem-combiner
                     prob
                     (problem-successors prob current)
                     (problem-states prob))))
           (searcher prob)))))
```

Common Lisp.

source credit: Peter Norvig.

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Who designed Lisp?
Why?

John McCarthy.
Because he needed more flexibility than Fortran could offer for symbolic computing (e.g., lists).

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Name a defining characteristic of high-level programming languages.

Facilities for data and control flow abstraction.
Machine-independence.
Human-friendly syntax.
(among others)

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How many lines of COBOL code were estimated to be in operation in the 22 square miles of Manhatten in the late 90ies?

Approximately 800 million.

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What's the root cause for the Y2K bug?

Failing to anticipate that requirements will change.
Nobody imagined in the 50-70ies that code might
run until the year 2000.

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Which major language is the ancestor of Pascal, C, and Java?

Algol.

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What does "ALGOL" stand for?

Algorithmic Language.

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What was Java's name before rebranding? Why?

Oak.
Supposedly because there was an oak tree in front of James Goslings office.

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"The teaching of XXX should be rated as a criminal offense: it mutilates the mind beyond recovery."

Said who about what?

Edsger W. Dijkstra on Basic.

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According to Bertrand Meyer (creator of Eiffel), what are the two things that are wrong with C++?

"There are only two things wrong with C++:
The initial concept and the implementation."

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What's the only control flow construct worse than a goto?

The COMEFROM statement.
Like a goto, but instead of annotating the location of the jump, one annotates the jump target.
Which means that apparently straight-line code is not necessarily straight-line.

Devised as a joke, it has been implemented in "esoteric languages" such as INTERCAL.

Another genius proposal: the DONT statement, to complement Fotran's DO statement.

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