Sean Poston
Variable Typing Through the Ages

Questions

1. What data types does this language have?
2. How are the types of variables determined?
3. How are the types of constants determined?
4. What is the syntax of the array types? (You could answer this by giving a sample declaration.)
5. What is the syntax of composite types?

1950s – FORTRAN

1. Fixed point (Integer) and floating point (Real)
2. For fixed point numbers, they are distinguished by their first character being I, J, K, L, M, or N followed by up to 5 numbers (total of 6 numbers). Floating point numbers can begin with anything else.
3. Fixed points allow 5-digit numbers up to 32786 and can be positive or negative. Floating point contains a decimal point somewhere and can even be used with scientific notation. (5.0E3).
4. BETA(5*J-2, K+2, L) would be an example. This would have to be preceded with a DIMENSION statement.
5. It doesn't seem like FORTRAN has composite types.

1960s – FORTRAN 66

1. INTEGER, REAL, DOUBLE PRECISION, COMPLEX, AND LOGICAL
2. They're explicitly declared by the programmer in a block at the beginning.
3.

1970s - C

1. [unsigned] short int, int, [unsigned] long, [unsigned] long long, [unsigned] char, float, double, long double
2. They are explicitly declared.
3. Constants are defined using either #define or const.
4. int arrayName[arraySize];
5. struct Struct { member definition };

1980s - Python

1. String, int, float, complex, list, tuple, range, dict, set, bool, bytes, bytearray, memoryview
2. They are derived implicitly from what is assigned to them.
3. They are usually assigned in an extra file that is then imported and used in the form of constant.PI.
4. There are a few ways for arrays. You can declare one without length with array = {}. You can put specific values with array = ["Hi", "Sean", "word"]. Technically you can do array = "String".
5. Users can create classes and objects.

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1990s - Java

1. Byte, short, int, long, float, double, Boolean, char
2. Variables are explicitly declared, as well as some of their scope.
3. Constants are determined using the final keyword.
4. String[] food = {“blue”, “yellow”, “red”};
5. Users can create objects and classes.

2000s – C#

1. Int, long, float, double, bool, char, string
2. Variables are explicitly declared.
3. Constants are declared using the const keyword.
4. int[] array = new int[5]; or int[] array = new int[] {1, 2, 3}; or int[] array = {1, 2, 3} or int[,] array = new int[2,3];
5. Users can create objects and classes.

2010s – Rust

1. Bool, char, isize, unsigned int, int, f32, f64, array, slice, str, tuple
2. Variables are implicitly typed.
3. The const keyword is used for constants. Static can also be used, but not necessarily to the same effect.
4. Let x: [i32; 5] = [1, 2, 3, 4, 5];
5. Users can create objects and classes.