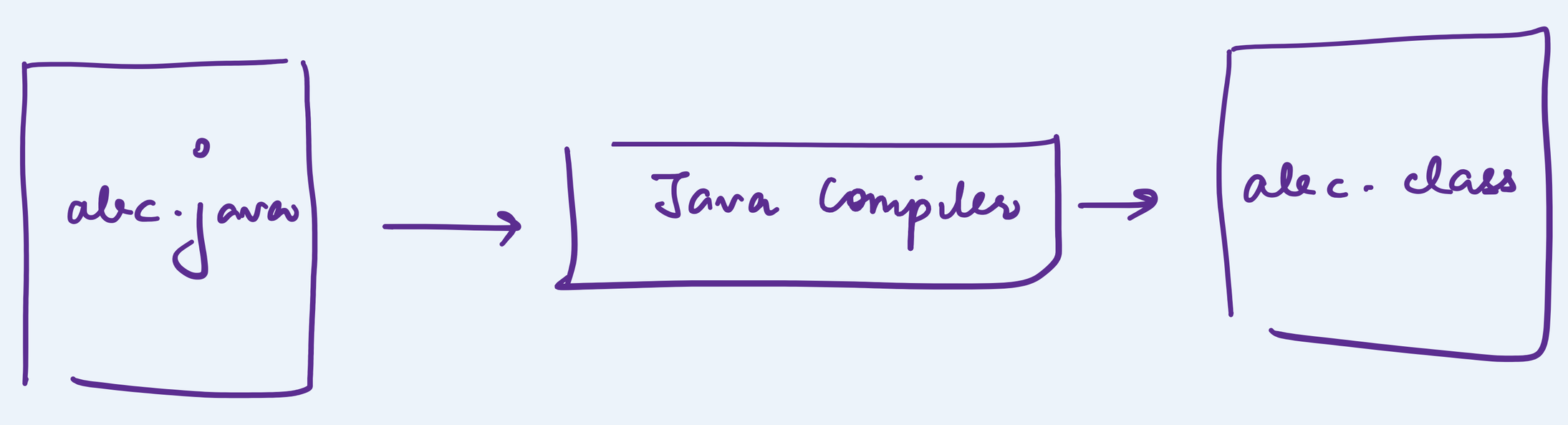
Monday, 6 December 2021 8:39 PM

Transition to C++

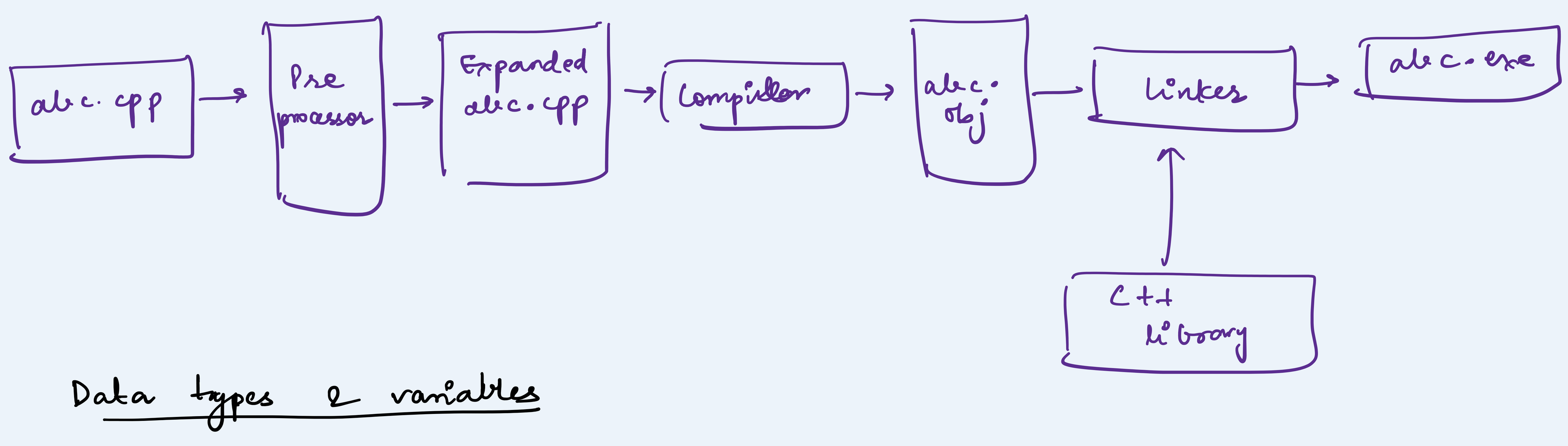
C++ → Bjarne Stroustrup, 1980s

Execution environment

Java → Compile - load - Interpret



C++ → Preprocess - Compiler - link - Run



Data types & variables

boolean → bool in C++

C++ String → char array / string class

1. C++ store strings ASCII characters, not UNICODE characters.
2. C++ strings can be modified, Java strings are immutable.
3. C++ → substr s.substr (i, n)
4. only concatenate strings with other strings, not random objects.
5. ==, !=, <=, >=, >, <

Variables & constants

```
int n = 5;
const int DAYS = 365;
```

classes:

```
class Point {
  public:
    Point();
    Point ( double xval, double yval);
  private:
    double x;
    double y;
};
```

① Heap objects → new

→ Car c = new Car();

delete

② Automatic objects

```
{
  Car c ("Honda")
  Car c = new car ("Honda");
}
```

Memory leaks

Java → garbage collector

C++ → x x

delete

Java	C++	Python
Array	array	list
Arraylist	vector	heterogeneous
homogeneous	homogeneous	list = ["apple", 2, "mango"]

int [] arr = new int[20];
double
long

int days [20]

b → 1|2|3|4|5

a → 1|2|3|4|5

```
vector <int> a;
vector <int> a(100);
a.push_back(2);
a.pop_back();
```

vector<int> b = a

b → a → 1|2|3|4|5

Input & Output

cin / cout

```
cout << "Hello world";
cin >> x;
string input
getline (cin, input);   // reads an entire line of input
```

Dynamic typing

In dynamic typing, type checking is performed at run time.

```
a = "hello"
print ( type (a))      // string
a = 5
print ( type (a))      // int
```

Static typing

string a = "Hello"

int a x x

Loops

→ for loops
→ while loops
→ do - while loops

Fast Input and output in C++

```
cin >> x
scanf ("%d", &x);
cout << x
printf ("%d", x);
```

cin / cout ⟶ scanf / printf

```
ios_base :: sync_with_stdio (false)
cin.tie (NULL)
```