

# From C to Java

Hsuan-Tien Lin

Department of CSIE, NTU

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# From HelloWorld.c to HelloWorld.java

```
1  /* HelloWorld.c */
2  #include <stdio.h>
3  int main(){
4      printf("Hello_World\n");
5      return 0;
6  }
```

```
1  /* HelloWorld.java */
2  import java.lang.*;
3  public class HelloWorld{
4      /** The comment that
5       * will show up in the doc
6       */
7      public static void main(String[] argv){
8          System.out.println("Hello_World"); // another comment
9      }
10 }
```

# Your Work Cycle

- 1 edit your Java source file(s)
- 2 compile
  - `javac HelloWorld.java`
  - output: `HelloWorld.class`
- 3 execute
  - `java HelloWorld`
- 4 generate document
  - `javadoc -d doc/ HelloWorld.java`

# What You Can and Cannot Do in Java (1/5)

```
1  /* C2Java_1.c */
2  int main(int argc, char* argv){
3      int i = 3, j = 5, k = 7;
4      char c = 'b'; double d = 3.3;
5      i += j; j = k * i;
6      k = (j++ % 2) - c;
7      i = d * 2;
8      c = 'a' + i;
9  }
```

```
1  /* C2Java_1.java */
2  public class C2Java_1{
3      public static void main(String[] argv){
4          int i = 3, j = 5, k = 7;
5          char c = 'b'; double d = 3.3;
6          i += j; j = k * i;
7          k = (j++ % 2) - c;
8          i = d * 2;
9          c = 'a' + i;
10     }
11 }
```

Arithmetic: Yes! Automatic Coercion: More Restricted.

# What You Can and Cannot Do in Java (2/5)

```
1  /* C2Java_2.c */
2  int main(int argc, char* argv){
3      int choice = 3, people = 4;
4      if (choice){
5          printf("choice_not_zero\n");
6          if (people >= 5) printf("too_many_people\n");
7      }
8      else
9          printf("%d\n", choice);
10     //also: switch(choice){case 1: ...}
11 }
```

```
1  /* C2Java_2.java */
2  public class C2Java_2{
3      public static void main(String[] argv){
4          int choice = 3, people = 4;
5          if (choice){
6              System.out.println("choice_not_zero");
7              if (people >= 5) System.out.println("too_many_people");
8          }
9          else
10             System.out.println(choice);
11         //also: switch(choice){case 1: ...}
12     }
13 }
```

Conditions: Yes! Nonzero as true (Zero as false): No.

# What You Can and Cannot Do in Java (3/5)

```
1  /* C2Java_3.c */
2  int main(int argc, char* argv){
3      int i;
4      int sum=0;
5      for(i=5;i;i--){
6          sum += i;
7          if (i == 3) continue;
8      }
9      //also: do, while, break ...
10 }
```

```
1  /* C2Java_3.java */
2  public class C2Java_3{
3      public static void main(String[] argv){
4          int i;
5          int sum=0;
6          for(i=5;i;i--){
7              sum += i;
8              if (i == 3) continue;
9          }
10         //also: do, while, break ...
11     }
12 }
```

Loops: Yes! Automatic integer => true/false: No.

# What You Can and Cannot Do in Java (4/5)

```
1  /* C2Java_4.c */
2  int main(int argc, char* argv){
3      char* s = "abc";
4      char* t = "123";
5      char s2[7];
6      printf("%c\n", s[1]);
7      printf("%c\n", s[3]);
8      strcpy(s2, s);
9      strcat(s2, t);
10     printf("%s\n", s2);
11 }
```

```
1  /* C2Java_4.java */
2  public class C2Java_4{
3      public static void main(String [] argv){
4          String s = "abc";
5          System.out.println(s[1]);
6          System.out.println(s[3]);
7          String s2 = s + "123";
8          System.out.println(s2);
9      }
10 }
```

String "Plus": Yes!  
String as Pointer to 0-terminated Char Array: Not really.

# What You Can and Cannot Do in Java (5/5)

```
1  /* C2Java_5.c */
2  int main(int argc, char* argv){
3      int a[3] = {1, 2, 3};
4      int* b = a;
5      int c[] = {7, 8, 9};
6      printf("%d\n", c[2] - c[0]);
7  }
```

```
1  /* C2Java_5.java */
2  public class C2Java_5{
3      public static void main(String[] argv){
4          int a[3] = {1, 2, 3};
5          int* b = a;
6          int c[] = {7, 8, 9};
7          System.out.println(c[2] - c[0] + c.length);
8      }
9  }
```

Array Access: Yes!  
Array Construction: Somewhat Different.  
Pointers: No More (Yeah?!)