10.4 Higher Order Functions in Java

Higher Order Function: A function that treats another function as data.

- e.g. takes a function as input.
- Example in Python:

```
def tenX(x):
   return 10*x

def do_twice(f, x):
   return f(f(x))

print(do_twice(tenX, 2))
```

Higher Order Functions in Java 7

Old School (Java 7 and earlier)

- Fundamental issue: Memory boxes (variables) cannot contain pointers to functions.
  - use an interface instead:

```
public interface IntUnaryFunction {
    int apply(int x);
}

public class TenX implements IntUnaryFunction {
    public int apply(int x) {
        return 10 * x;
    }
}
```

This code above is the same as the Python code:

```
def tenX(x):
    return 10*x
```

Now, to finish the rest of the Python code in Java:

```
public interface IntUnaryFunction {
    int apply(int x);
}

public class TenX implements IntUnaryFunction {
    public int apply(int x) {
        return 10 * x;
    }
}

public class HoFDemo {
    public static int do_twice(IntUnaryFunction f, int x) {
        return f.apply(f.apply(x));
    }

    public static void main(String[] args) {
        System.out.println(do_twice(new TenX(), 2));
    }
}
```

This code above is equivalent to the Python code provided earlier.

Previous
10.3 Casting

Next
10.5 Exercises

Last updated 7 months ago