TPP

Transformation Priority Premise

the road to better code

CONTENT

- WHAT
- WHY
- HOW

? WHAT ?

- List of Transformations ordered by complexity

- used to change the ***behaviour*** of the code

Nr	Transformation	From	To
1	{} → nil		nil
2	nil → constant	nil	"1"
3	constant → constant+	"1"	"1" + "2"
4	constant → scalar	"1" + "2"	argument
5	statement → statements	argument	arguments
6	unconditional → conditional	arguments	if(condition) return arguments
7	scalar → array	dog	[dog, cat]
8	array → container	[dog, cat]	{dog = “DOG”, cat = “CAT”}
9	statement → tail recursion	a + b	a + recursion
10	conditional → loop	if(condition)	while(condition)
11	tail recursion → full recursion	a + recursion	recursion
12	expression → function	today -birthday	CalculateAge()
13	variable → mutation	day	var day = 10; day = 11;
14	switch → case		

? WHY ?

- transformation in small steps
- simplest transformation as possible
- produce more generic code

? HOW ?

```
public String fromArabic(int arabicInput) {
    return "I";
}
```

Next step: Implement II for 2

Possibility Number 1

```java
public String fromArabic(int arabicInput) {
    if (arabicInput == 2) {
        return "II";
    }
    return "I";
}
```

unconditional → conditional (Nr. 6)

Possibility Number 2 (Step 1)

```java
public String fromArabic(int arabicInput) {
    String result = "I";
    return result;
}
```

constant → scalar (Nr. 4)

Possibility Number 2 (Step 2)

```
1 public String fromArabic(int arabicInput) {
2     String result = "I";
3     result += "I";
4     return result;
5 }
```

statement → statements (Nr. 5)

Possibility Number 2 (Step 3)

```java
public String fromArabic(int arabicInput) {
    String result = "I";
    if(arabicInput > 1) {
        result += "I";
    }
    return result;
}
```

> unconditional → conditional (Nr. 6)

Without TPP

```
public String fromArabic(int arabicInput) {
    if (arabicInput == 2) {
        return "II";
    }
    return "I";
}
```

With TPP

```
public String fromArabic(int arabicInput) {
    String result = "I";
    if(arabicInput > 1) {
        result += "I";
    }
    return result;
}
```

Next step: Implement III for 3

Possibility Number 1

```java
public String fromArabic(int arabicInput) {
    if (arabicInput == 2) {
        return "II";
    }
    if (arabicInput == 3) {
        return "III";
    }
    return "I";
}
```

unconditional → conditional (Nr. 6)

Possibility Number 2

```java
public String fromArabic(int arabicInput) {
    String result = "I";
    while(arabicInput > 1) {
        result += "I";
        arabicInput--;
    }
    return result;
}
```

conditional → loop (Nr. 10)

Without TPP

```
public String fromArabic(int arabicInput) {
    if (arabicInput == 2) {
        return "II";
    }
    if (arabicInput == 3) {
        return "III";
    }
    return "I";
}
```

With TPP

```
public String fromArabic(int arabicInput) {
    String result = "I";
    while(arabicInput > 1) {
        result += "I";
        arabicInput--;
    }
    return result;
}
```

CONCLUSION

- do simple transformations
- print that list and hang it on the wall