

CS 301 Example Program

Katherine Kjeer

May 14, 2016

---Original Program---

```
class Example extends None {
    <string> => boolean fcnField

    void main(string [] args) {
        <int> => boolean f
        boolean cond

        fcnField = (string s): boolean => {
            return true
        }

        f = (int fParam): boolean => {
            int fLocal = 3
            <int> => int g
            g = (int gParam): int => {
                return fLocal + fParam * gParam
            }
            return g(fParam + 10) > 0
                && fcnField(args[0])
        }

        cond = f(5)
        Library.print("cond: ")
        Library.printb(cond)
        Library.println("")
    }
}
```

---Closure Program---

```
class Example extends None {
    PARAMS__string__RETURN__boolean_Template fcnField

    void main(string [] args) {
        PARAMS__int__RETURN__boolean_Template f
        boolean cond

        fcnField = new Example_main_anon0_Closure()
            .create(fcnField, args, f, cond)

        f = new Example_main_anon1_Closure()
            .create(fcnField, args, f, cond)

        cond = f.call(5)
        Library.print("cond: ")
        Library.printb(cond)
        Library.println("")
    }
}
```

---Template Classes---

```
class PARAMS__int__RETURN__boolean_Template extends None {
    boolean call(int templateParam_0) {
        return true
    }
}

class PARAMS__string__RETURN__boolean_Template extends None {
    boolean call(string s) {
        return true
    }
}

class PARAMS__int__RETURN__int_Template extends None {
    int call(int templateParam_0) {
        return 0
    }
}
```

---Closure Classes---

```
class Example_main_anon0_Closure extends Some(PARAMS__string__RETURN__boolean_Template) {
    PARAMS__string__RETURN__boolean_Template fcnField
    string [] args
    PARAMS__int__RETURN__boolean_Template f
    boolean cond

    Example_main_anon0_Closure create(
        PARAMS__string__RETURN__boolean_Template fcnField,
        string [] args,
        PARAMS__int__RETURN__boolean_Template f,
        boolean cond
    ) {
        this.fcnField = fcnField
        this.args = args
        this.f = f
        this.cond = cond
        return this
    }

    boolean call(string s) {
        return true
    }
}

class Example_main_anon1_Closure extends Some(PARAMS__int__RETURN__boolean_Template) {
    PARAMS__string__RETURN__boolean_Template fcnField
    string [] args
    PARAMS__int__RETURN__boolean_Template f
    boolean cond

    Example_main_anon1_Closure create(
        PARAMS__string__RETURN__boolean_Template fcnField,
        string [] args,
        PARAMS__int__RETURN__boolean_Template f,
        boolean cond
    ) {
        this.fcnField = fcnField
        this.args = args
        this.f = f
        this.cond = cond
        return this
    }

    boolean call(int fParam) {
        int fLocal = 3
        PARAMS__int__RETURN__int_Template g
        g = new Example_main_anon1_anon1_Closure().create(fParam, args, g, fLocal, cond, fcnField, f)
        return g.call(fParam + 10) > 0 && fcnField.call(args[0])
    }
}

class Example_main_anon1_anon1_Closure extends Some(PARAMS__int__RETURN__int_Template) {
    int fParam
    string [] args
    PARAMS__int__RETURN__int_Template g
    int fLocal
    boolean cond
    PARAMS__string__RETURN__boolean_Template fcnField
    PARAMS__int__RETURN__boolean_Template f
```

```

Example_main_anon1_anon1_Closure create(
    int fParam, string [] args,
    PARAMS__int__RETURN__int_Template g,
    int fLocal, boolean cond,
    PARAMS__string__RETURN__boolean_Template fcnField, PARAMS__int__RETURN__boolean_Template f
) {
    this.fParam = fParam
    this.args = args
    this.g = g
    this.fLocal = fLocal
    this.cond = cond
    this.fcnField = fcnField
    this.f = f
    return this
}

int call(int gParam) {
    return fLocal + fParam * gParam
}
}

```