Compila17 compiler

Contributors

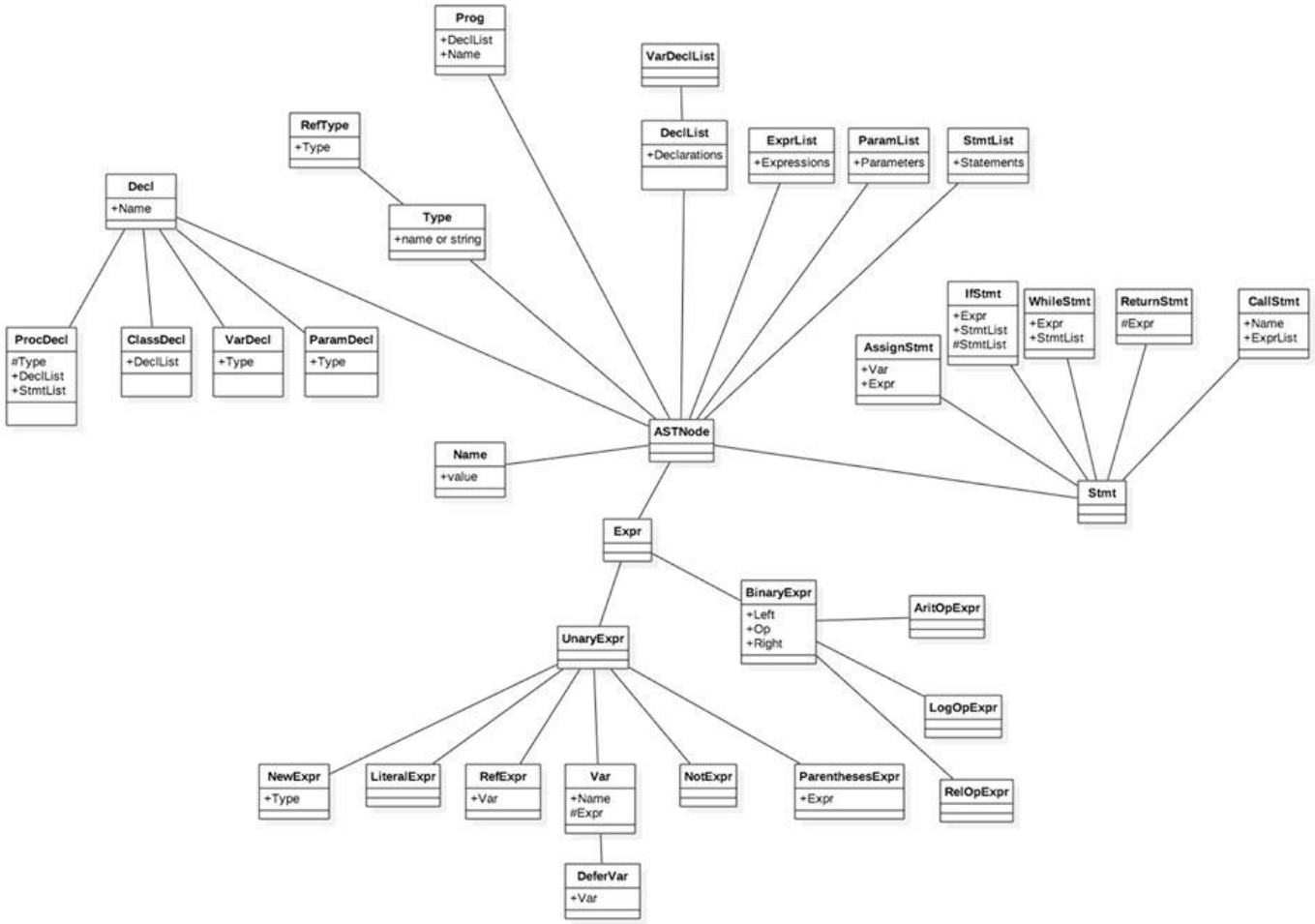
- oddgfa - Odd Gunnar Fatland
- pavelju - Pavel Jurasek
- salihasa - Saliha Sajid

Usage

Build using `ant build` and run using `ant run`.

Design

We divided the nodes into three main parts: expressions, statements and declarations. The structure can be seen in the picture below.



AST from Compila.cmp

```
(PROGRAM (NAME ComplexAddition)
    (CLASS_DECL (NAME Complex)
        (VAR_DECL (TYPE float) (NAME Real))
        (VAR_DECL (TYPE float) (NAME Imag))
    )
    (PROC_DECL (NAME Swap)
        (PARAM_DECL (TYPE (REF int)) (NAME a))
        (PARAM_DECL (TYPE (REF int)) (NAME b))

        (VAR_DECL (TYPE int) (NAME tmp))

        (ASSIGN_STMT
            (NAME tmp)
            (DEREF (NAME a))
        )
        (ASSIGN_STMT
            (DEREF (NAME a))
            (DEREF (NAME b))
        )
        (ASSIGN_STMT
            (DEREF (NAME b))
            (NAME tmp)
        )
    )
    (PROC_DECL (TYPE Complex) (NAME Add)
        (PARAM_DECL (TYPE Complex) (NAME a))
        (PARAM_DECL (TYPE Complex) (NAME b))

        (VAR_DECL (TYPE Complex) (NAME retval))

        (ASSIGN_STMT
            (NAME retval)
            (NEW (TYPE Complex))
        )
```

```
        (ASSIGN_STMT
            ( . (NAME retval) (NAME Real))
            (ARIT_OP +
                ( . (NAME a) (NAME Real))
                ( . (NAME b) (NAME Real))
            )
        )
        (ASSIGN_STMT
            ( . (NAME retval) (NAME Imag))
            (ARIT_OP +
                ( . (NAME a) (NAME Imag))
                ( . (NAME b) (NAME Imag))
            )
        )
        (RETURN_STMT (NAME retval))

    )
    (PROC_DECL (TYPE int) (NAME Max)
        (PARAM_DECL (TYPE int) (NAME a))
        (PARAM_DECL (TYPE int) (NAME b))

        (IF_STMT
            (REL_OP >
                (NAME a)
                (NAME b)
            )
            (
                (RETURN_STMT (NAME a))
            )
        )

        (RETURN_STMT (NAME b))

    )
    (PROC_DECL (NAME Main)
        (PROC_DECL (TYPE float) (NAME Square)
            (PARAM_DECL (TYPE float) (NAME val))

            (RETURN_STMT (ARIT_OP #
```

```
                (NAME val)
                (FLOAT_LITERAL 2.0)
            ))

        )
        (VAR_DECL (TYPE float) (NAME num))

        (ASSIGN_STMT
            (NAME num)
            (FLOAT_LITERAL 6.48074)
        )
        (CALL_STMT (NAME print_float)
            (NAME num)
        )

        (CALL_STMT (NAME print_str)
            (STRING_LITERAL " squared is ")
        )

        (CALL_STMT (NAME print_float)
            (CALL_STMT (NAME Square)
                (NAME num)
            )

        )

        (RETURN_STMT)

    )
)
```