



Milestone 1

Indian Institute of Technology Kanpur

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Course: CS335

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1 Tools Used

- **Flex** is used for writing the lexer.
- **Bison** is used for writing the parser.
- **Dot** is used for creating the Abstract Syntax Tree.

2 Features Implemented

The following language features are implemented:

- Primitive data types
- 1D list
- Basic operators:
 - Arithmetic operators: `+`, `-`, `*`, `/`, `//`, `%`, `**`
 - Relational operators: `==`, `!=`, `>`, `<`, `>=`, `<=`
 - Logical operators: `and`, `or`, `not`
 - Bitwise operators: `&`, `|`, `^`, `~`, `<<`, `>>`
 - Assignment operators: `=`, `+=`, `-=`, `*=`, `/=`, `%=`, `**=`, `&=`, `|=`, `^=`, `<<=`, `>>=`
- Control flow via `if-elif-else`, `for`, `while`, `break` and `continue`
- Iterating over ranges specified using the `range()` function.
- Recursion
- The library function `print()` for only printing the primitive Python types, one at a time
- Classes and objects, including multilevel inheritance and constructors.
- Methods and method calls, including both static and non-static methods
- Static polymorphism via method overloading

3 Compilation and Execution Instructions

```
$ make
```

```
$ ./m1.out -input inputfilename.py -output outputfilename.dot -verbose
```

```
$ dot -Tpdf outputfilename.dot -o graph.pdf
```

4 Command Line Options

The following command line options have been implemented:

- **-help**: Gives instructions on how to use the parser and generate the parse tree.
- **-input**: Used to pass the path to the input file containing the Python code to be parsed.

If path to input file is not passed, a warning message will be displayed and input will be parsed from a default file "input.py".

- **-output**: Used to pass the path to the file where the output will be displayed.

If path to output file is not passed, a warning message will be displayed and the output will be displayed in the default file "output.dot".

- **-verbose**: Generates a file "verbose-output.pdf" which contains detailed information about the parser's output stored in "parser.output"

Usage: ./a.out -help -input input.py -output output.dot -verbose The tags -help and -verbose are optional and can be used as and when required.