ChartLan

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Overview

- Based on C-Like language
- More efficient and convenience for user to handle array type data.
- Specified in Array Creating, information storing, retrieving, data appending and computing.
- Smart basic operations: inserting, concatenating, indexing and print Array
- Smart mathematic operations between array and integer: “.+”,”.*”,”.-”,”./”
Schedule

*: Finally, we are proceeding the last step and we endeavor to do our best.
Language Structure

Input

Scanner
scanner.mll

Parser
parser.mly

Semantic Check
asttosast.ml

Compiler
compiler.ml

Interpreter
execute.ml

Output

Tokens
AST
SAST
Bytecode
Details

- Static Scoped / No nested function declaration
- Stack-based Bytecode
- C-style like language
- No strongly typed
- Staticly Typed (Compiler can determine type)
- Global/Local Variable Declaration
Details (cond.)

- Data Type: int, string, array.
- Int 0 and 1: Act as Boolean false and true.
- Array: List of integers
- String (Array of chars)
- Function Declaration: def <type> <fname> <argu>
- Execution Control: if...else..., while
```python
def int f(a):
   IntArray x = CreateArray (0,1,2,3);
    ...
    ...
    }
```

```
Main()
...
Formals a
func f
local variable x
...
...
...
...
```
Sample Code

- int array[4] x;
  def int main(){ x=\%(3,4,5)\%+12; printarray(x);
  return 2;} () #~insert an element into the back of the array~#
- **Output: 3,4,5,12**

- def int main(){ intarray[3] x; int a;
  x=\%(1,2,3)\%; a = x[2]; print(a); return 2;}
  #~indexing~#
- **Output: 3**
Sample Code

0 def int main() { intarray[3] x; intarray[3] y;
   x=%(1,2,3)%; y=x.*2; printarray(y); return 1;}
  #~dot-operation of array~#
0 Output: 2,4,6

0 def int main(){ intarray[3] x; intarray[3] y;intarray[6] z;x=%(1,2,3)%;y=%(4,5,6)% ;z=x*y; printarray(z); return 2;}
  #~This program test the Array append by *~#
0 Output: 1,2,3,4,5,6
Lesson Learned

- Ocaml is hard but powerful.
- Everything should be scheduled before executing.
- Acting as a team is the most important element
- Thanks for the whole semester’s class.