Team Hmm

Project I Compiler

Team Members

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Technology Stack

Implementation Details

Component	Technology
Source Language	Imperative (I)
Implementation Language	Java
Parser Development Tool	Bison-based parser
Target Platform	WebAssembly (WASM)

Test 1: Variable Declarations

Code Example:

```
var x: integer is 42;
var y: real is 3.14;
var flag: boolean is true;
var name is "test";
```

✓ **Expected:** Successful parsing with explicit types and type inference

Test 2: Arrays & Data Structures

Code Example:

```
var numbers: array[5] integer;
numbers[1] := 10;
numbers[2] := 20;
var sum: integer is numbers[1] + numbers[2];
```

✓ **Expected:** Array declaration, assignment, and 1-based indexing

Test 3: Record Types

Code Example:

```
type Point is record
    var x: real;
    var y: real;
end

var p1: Point;
p1.x := 1.5;
p1.y := 2.7;
```

✓ **Expected:** Record type definition and dot notation access

Test 4: While Loops

Code Example:

```
var counter: integer is 10;
while counter > 0 loop
    print counter;
    counter := counter - 1;
end
```

✓ **Expected:** Boolean condition evaluation and loop execution

Test 5: For Loops

Code Example:

```
for i in 1..10 loop
    print i * i;
end

for j in 10..1 reverse loop
    print j;
end
```

✓ **Expected:** Forward and reverse range iteration

Test 6: Functions & Recursion

Code Example:

```
routine factorial(n: integer): integer is
    if n <= 1 then
        return 1;
    else
        return n * factorial(n - 1);
    end
end

var result: integer is factorial(5);
```

✓ **Expected:** Function declaration, recursion, and return values

Test 7: Type Conversions

Code Example:

```
var i: integer is 42;
var r: real is i;
var b: boolean is 1;
var converted: integer is true;
```

✓ **Expected:** Assignment conformance rules for type casting

Test 8: Error Detection

Code Example:

```
var flag: boolean is 3.14;
```

❌ **Expected:** Compilation error - invalid real-to-boolean assignment

Test 9: Operator Precedence

Code Example:

```
var result: integer is 2 + 3 * 4 - 1;
var comparison: boolean is (result > 10) and not (result = 15);
```

✓ **Expected:** Correct precedence: `*` > `+`, logical operators

Test 10: Complex Data Structures

Code Example:

```
type Student is record
    var id: integer;
    var grade: real;
end

var students: array[3] Student;
students[1].id := 101;
students[1].grade := 85.5;

for student in students loop
    print student.id, student.grade;
end
```

✓ **Expected**: Nested data structures and iteration

Thank you for attention.