Hoisting Nested Functions

Program Testing and Analysis – Winter 2017/18

TECHNISCHE UNIVERSITÄT DARMSTADT

Mentor

Marina Billes

Presented By

Chaitra Hegde (2917308)

Anam Dodhy (2618089)

What is Hoisting?

TECHNISCHE UNIVERSITÄT DARMSTADT

- Hoisting is the JavaScript interpreter's action of moving all variable and function declarations to the top of the current scope

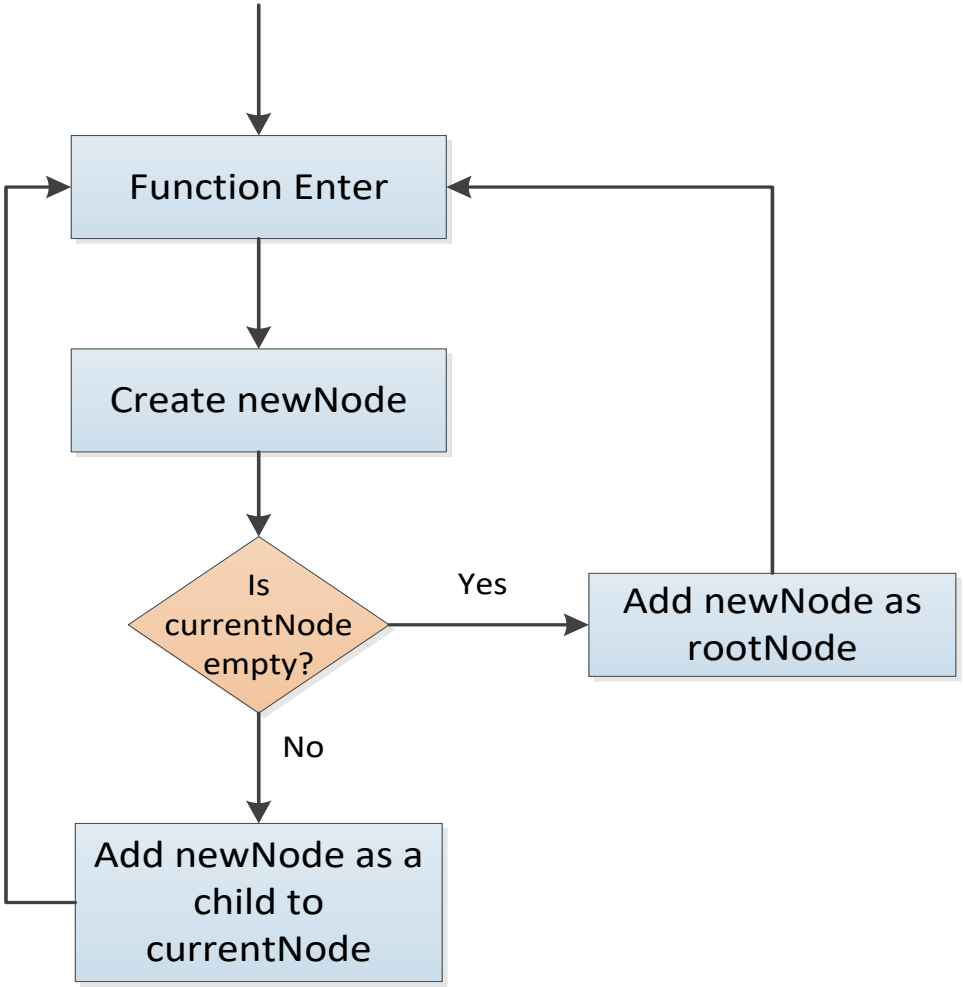
- Rules for Hoisting Nested Functions:
  - Rule 1: the nested function must not depend on the local variables of it's parent function.
  - Rule 2: there should be no other function definition at the same level of the parent function that has the same name as the nested function.

Jalangi Callbacks used

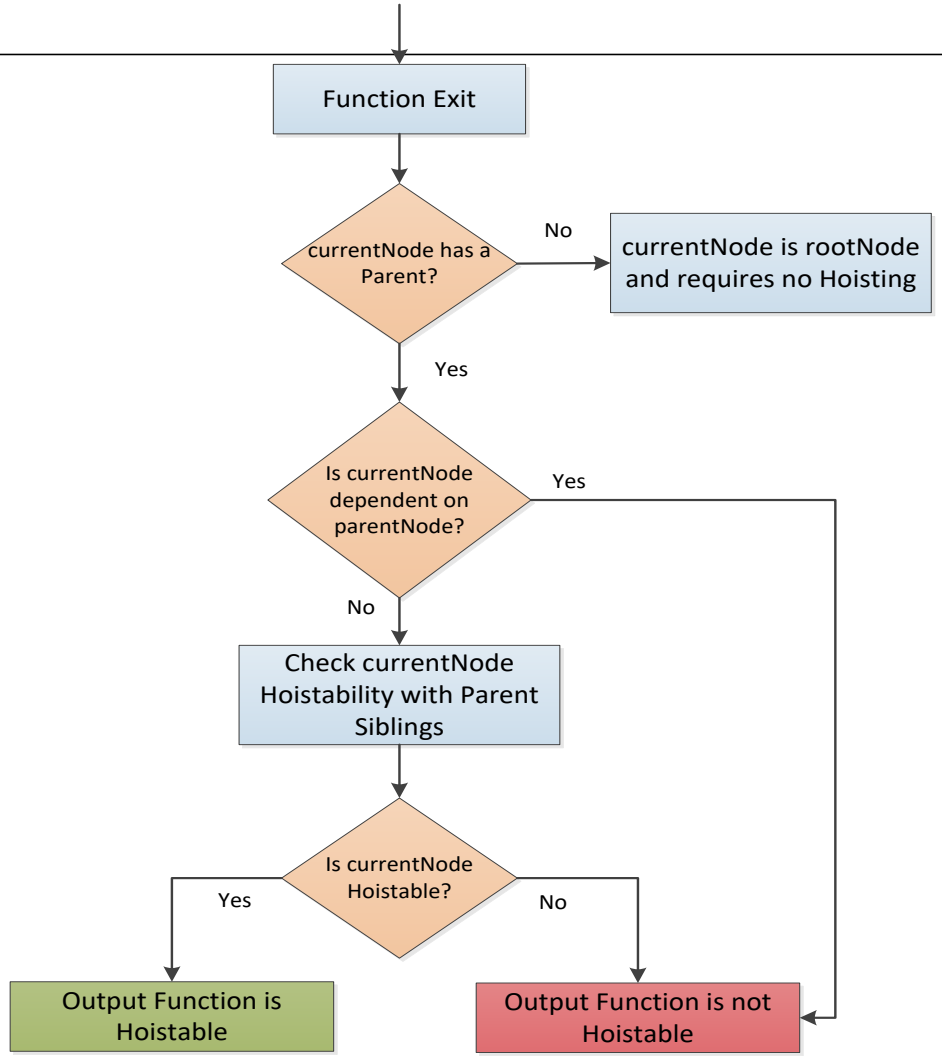
TECHNISCHE UNIVERSITÄT DARMSTADT

- functionEnter()
  - Triggered before starting the execution of a function
- functionExit()
  - Triggered when the execution of a function is completed
- read()
  - Triggered after reading a variable
- write()
  - Triggered before writing a variable
- declare()
  - Triggered when the scope of a local variable starts

Approach


Function Enter
Create newNode
Is currentNode empty?
Yes
Add newNode as rootNode
No
Add newNode as a child to currentNode

Approach - Continued



Handling Corner Cases

- Function Expressions
- eval
  - Direct eval
  - Indirect eval
- Recursive Functions

Evaluation

TECHNISCHE UNIVERSITÄT DARMSTADT

- We are still working on this.

TECHNISCHE UNIVERSITÄT DARMSTADT

Thank You!

References

- Flanagan. JavaScript: The Definitive Guide. O'Reilly Media, 2011.
- https://github.com/Samsung/jalangi2