

Smalltalk

Yongqi Jia ^{*}, Jiaxu Kang [†]

April 7, 2020

1 Abstract

2 Introduction

3 History

3.1 Why was the language designed?

The purpose of the Smalltalk project is to provide computer support for the creative spirit in everyone. Our work flows from a vision that includes a creative individual and the best computing hardware available. We have chosen to concentrate on two principle areas of research: a language of description (programming language) that serves as an interface between the models in the human mind and those in computing hardware, and a language of interaction (user interface) that matches the human communication system to that of the computer.

3.2 Who designed it?

Alan Kay, Dan Ingalls, Adele Goldberg, Ted Kaehler, Diana Merry, Scott Wallace, and others

3.3 What is its current status?

While Smalltalk is not “popular” today, it is certainly still widely used.

4 Control Structures

Smalltalk is the first computer language based entirely on the concepts of objects and messages. Therefore, in smalltalk, everything is an object, even 3, true, nil, activation records.[3]

^{*}Email: yongqijia@email.arizona.edu

[†]Email: jiaxukang@email.arizona.edu

“Control structures do not have special syntax in Smalltalk. They are instead implemented as messages sent to objects.”[1] control structures all handled by message sending. So that’s meaning we do not need to built-in control structures. Because of this, we can combine any objects together to create control structures.[2] In terms of that, I’ll introduce several objects such as, ifTrue, whileTrue and exception.
ifTrue(same as ifFalse):

```
@condition ifTrue: [— ‘@temps — ‘@.statements]
expr ifTrue: [statements to evaluate if expr]
```

whileTrue:

```
— ‘@temps —
‘@.Statements1.
[‘index j= ‘@stop]
whileTrue:
[— ‘@blockTemps —
‘@.BlockStmts1.
‘index := ‘index + 1].
‘@.Statements2’
```

Exception:

```
‘@block
on: ‘exception
do: [ :‘@err — — ‘@temps — ]
```

This is some codes that I write:

IfPrint

x:=0 .

x=1 ifTrue: [Transcript cr; show: 'this will not printed.']

ifFalse: [Transcript cr; show: 'this will be printed.']

Everything in Smalltalk is an object. So IfPrint is a method in a class named “P2MyIf”. And I give x value first. Then giving some expression before using if function like x=1. ifTrue and ifFalse also are subclasses in known packages. We just call and use it.

5 Data Type

6 Subprograms

7 Summary

8 References

References

- [1] Smalltalk, Mar 2020.
- [2] Adele Goldberg and L Peter Deutsch. Smalltalk. *Encyclopedia of Software Engineering*, 2002.
- [3] Fred Rivard. Smalltalk: a reflective language. In *Proceedings of REFLECTION*, volume 96, pages 21–38, 1996.