Computer Science CSCI 261

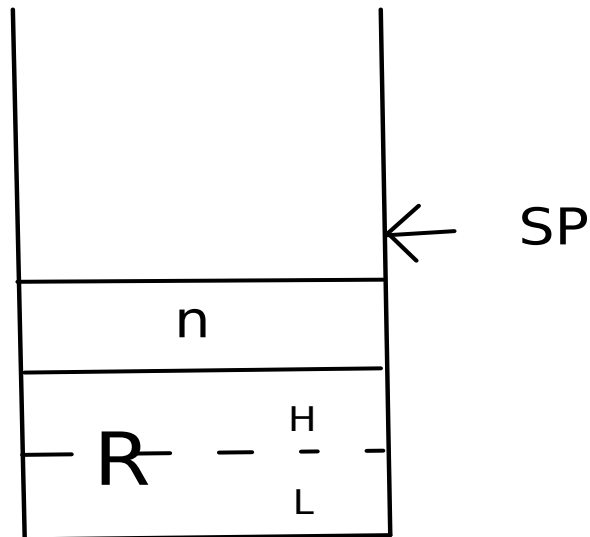# Computer Architecture and Assembly Language

Dr. Peter Walsh

Department of Computer Science

Vancouver Island University

peter.walsh@viu.ca

SSBC Parameter Passing

○ Pass by Value

  • pass the actual parameter value(s) on

    the top of the stack above the return address

○ Pass by Reference

  • pass the address of the parameter(s) on

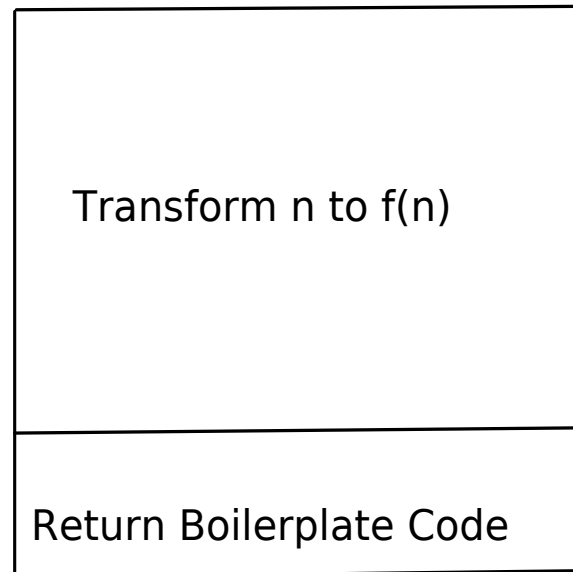   the top of the stack above the return address

Pass By Value

◯ Stack on Subroutine Entry

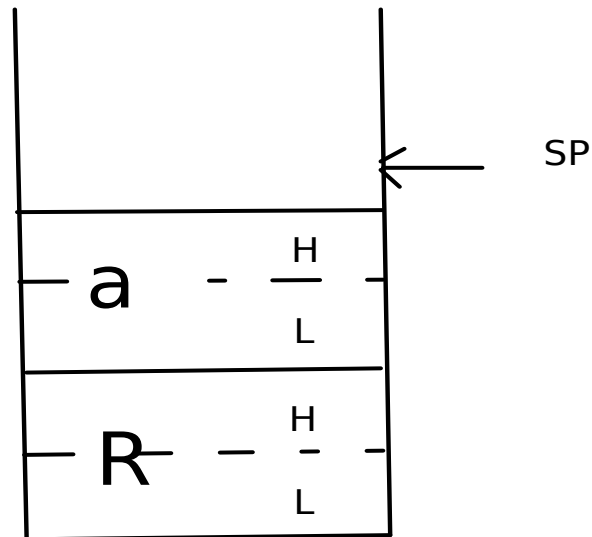- • assume a single value parameter n

Pass By Value cont.

○ Subroutine Structure


```
┌─────────────────────────────┐
│                             │
│      Transform n to f(n)    │
│                             │
├─────────────────────────────┤
│                             │
│    Return Boilerplate Code  │
└─────────────────────────────┘
```
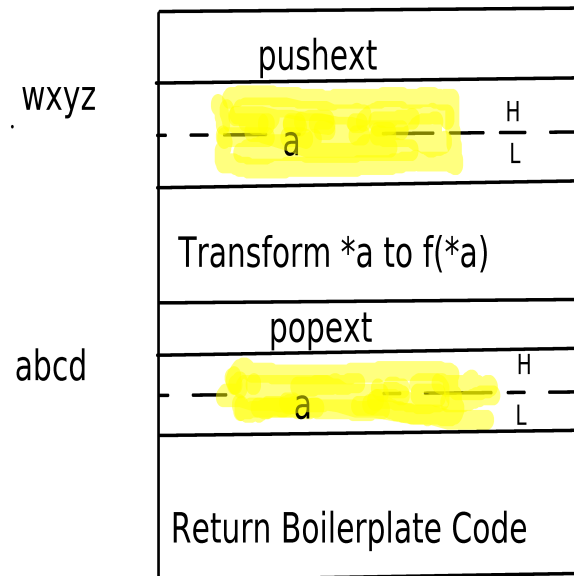
Pass By Reference

○ Stack on Subroutine Entry

  • assume a single reference parameter a

Pass By Reference cont.

○ Subroutine Structure

pushext
H L a
Transform *a to f(*a)
popext
H L a
Return Boilerplate Code

wxyz

abcd

Pass By Reference cont.

○ Reference Boilerplate Code
  • how to initialize $wxyz$ and $abcd$ from the stack?

```
popext wxyz
pushext wzyz
popext abcd
popext wxyz+1
pushext wxyz+1
popext abcd+1
```

Pass By Reference cont.

○ Revised Subroutine Structure

Reference Boilerplate Code
pushext a
Transform *a into F(*a)
popext a
Return Boilerplate Code