

CS603

# Programming Languages

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University of Alabama

# Overview

- Extending environments with let
- Adding a type constructor to typed Impcore

# Extending Environments using let

*exp* ::= (*let-keyword* (*{(variable-name exp)}*) *exp*)

...

*let-keyword* ::= let | let\* | letrec

```
(define makeAccount (balance)
  (lambda (amt)
    (let
      ((adjAmt (if (> 0 amt) 0 amt)))
      (begin
        (set balance (- balance adjAmt))
        (print balance)
        adjAmt))))
```

Creates an account  
function  
that when  
evaluated, prints  
balance, and return  
adjusted withdrawal

# Types for Arrays

- Adding a type constructor to a (non-polymorphic) language involves
  - adding syntax
  - adding operations (semantics) for the type