

# Assignment 3: Compilation and Interpretation

YOUR NAME

Due: Friday, March 9, 2018

## **1 Denotational Semantics: IMP**

1.1.

## **2 Comparing Operational and Denotational Semantics**

2.1.

## **3 Implementation: General Recursion and Polymorphism**

## **4 Final Project Preparation: Proposal**

4.1.

## A Syntax of IMP

Typ	$\tau ::=$	num	num	numbers
		bool	bool	booleans
Exp	$e ::=$	addr[ $a$ ]	$a$	addresses (or “assignables”)
		num[ $n$ ]	$n$	numeral
		bool[ $b$ ]	$b$	boolean
		plus( $e_1; e_2$ )	$e_1 + e_2$	addition
		times( $e_1; e_2$ )	$e_1 * e_2$	multiplication
		eq( $e_1; e_2$ )	$e_1 == e_2$	equal
		le( $e_1; e_2$ )	$e_1 \leq e_2$	less-than-or-equal
		not( $e_1$ )	$!e_1$	negation
		and( $e_1; e_2$ )	$e_1 \&\& e_2$	conjunction
		or( $e_1; e_2$ )	$e_1    e_2$	disjunction
Cmd	$c ::=$	set[ $a$ ]( $e$ )	$a := e$	assignment
		skip	skip	skip
		seq( $c_1; c_2$ )	$c_1; c_2$	sequencing
		if( $e; c_1; c_2$ )	if $e$ then $c_1$ else $c_2$	conditional
		while( $e; c_1$ )	while $e$ do $c_1$	looping
Addr	$a$			