

Assignment 4: Program Verification and Implementation

YOUR NAME

1 Axiomatic Semantics: IMP

1.1.

2 Abstract Machines and Control Flow

2.1.

3 Final Project Preparation: Start Paper Drafting

3.1.

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			