Computer Science Comprehensive Exam—Spring 1999 Programming Languages

Instructions: Please answer all the questions directly on the exam itself. Answer 9 of the following 13 questions in 5 or 6 sentences. Explain answers as fully as possible, give examples if appropriate, define terms.

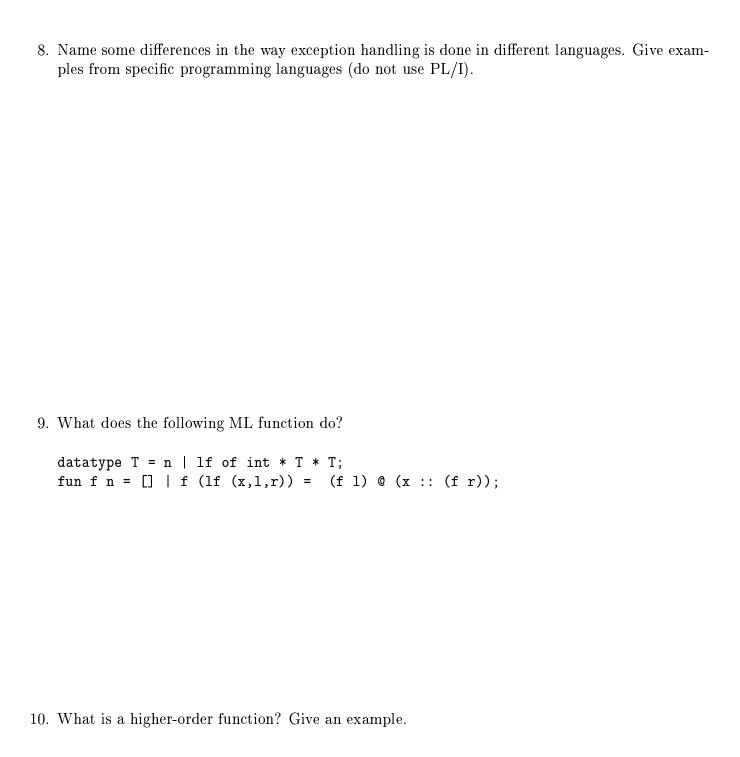
1	Why	ctudy	programming	languages?
Ι.	VV II.y	Study	programming	ranguages:

2. Describe an object-oriented language other than C++ or Java.

3.	What are the three main approaches to defining programming language semantics?
4.	The assignment statement $A:=B$ can mean different things. Explain carefully the different possible meanings it can have.

5.	. V	Write	e a	\sin	ple	prog	gran	n tha	at d	listi	ngu	iishe	es c	all l	by	refe	renc	e ai	nd c	all l	ру :	$_{ m name.}$	Exp	olain
6.	. F	How	is p	oassi	ing	proc	cedu	ıres	and	l fui	$_{ m ncti}$	ons	as	arg	${ m um}$	ents	s im	plen	nen	ted?				

7.	Write a very short C or C++ program that demonstrates that these languages do no inter-module type checking.



11.	Formulate 3	in	PROLOG	the	classical	syllogism:
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All men are mortal; Socrates is a man;

Therefore Socrates is mortal.

12. What is a unifying substitution? Give the most general unifying substitution for the following pair of terms:

$$g(f(a,b),h(x,y))$$
 $g(f(z,b),h(b,b))$

13. Describe the support for object-oriented programming in Ada 95.