

Tutorial 6

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Question 1

- Data typing checking is concerned with the manner in which different data types can be manipulated in the same statement. Consider the simplified scenario:
- Three programming languages, “CRAP”, “PASCAL-2”, and “C4”, makes use of the following data type checking:
 - ◆ “CRAP”: Typeless Checking – the programming language has no explicit means for data typing and does not enforce type checking.
 - ◆ “PASCAL-2”: Mixed-mode Checking – the programming language allows for mixing of different data types, and then converts operands of different but compatible types.
 - ◆ “C4”: Strong-type Checking – the programming language only allows operations on data objects to be performed if they are of the same data type

Question 1 (cont’)

- A program makes use of the following variables:
 - ◆ integers a, b ;
 - ◆ floating point numbers c ;
 - ◆ characters d ;
- Copy the following table into your answer script. Now for each one of the following operations, indicate on whether the operation will be allowed with a short justification why this is so, and also whether any conversion of operands occur.

Question 1 (cont’)

Operation	CRAP	PASCAL-2	C4
$a + b$			
$a + c$			
$a + d$			

Answer

Operation	CRAP	PASCAL-2	C4
$a + b$	Allowed, as no checking is done	Allowed	Allowed
$a + c$	Allowed, as no checking is done	Allowed, but convert a to float	Disallowed as mechanism disallows different data types to be used.
$a + d$	Allowed, as no checking is done	Disallowed; no conversion as types are incompatible	Disallowed as mechanism disallows different data types to be used.