NAG Library Chapter Introduction

X07 – IEEE Arithmetic

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1 Scope of the Chapter

This chapter provides routines to handle various aspects of IEEE floating-point arithmetic behaviour.

2 Background to the Problems

Modern systems allow you to control what happens to your program when an exceptional event such as overflow or division by zero occurs. Often, the default behaviour is for program execution to continue, while setting an appropriate flag. Sometimes the default behaviour is to halt execution and print a warning or error message.

The routines in Chapter X07 allow creation and detection of NaNs (Not a Number) and infinities, as well as alteration of the behaviour of a program when an exception occurs.

3 Recommendations on Choice and Use of Available Routines

Routines are provided to detect and create IEEE NaN (Not a Number) and infinity values, and to get and set the halting mode of various floating-point exceptions.

4 Functionality Index

Create a floating-point infinity X07BAF
Create a floating-point NaN (Not a Number) X07BBF
Determine whether a floating-point number is finite X07AAF
Determine whether a floating-point number is NaN (Not a Number) X07ABF
Get current behaviour of floating-point exceptions X07CAF
Set behaviour of floating-point exceptions X07CBF

5 Auxiliary Routines Associated with Library Routine Parameters

None.

6 Routines Withdrawn or Scheduled for Withdrawal

None.