Support for Fortran Standards Development in 2020-2021

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1. Introduction

Fortran remains the language of choice for much scientific, engineering, and economic programming, particularly for use on supercomputers and for very large programs that have evolved over many years.

UK members participate in the ISO Fortran committee (SC22/WG5), the BSI Programming Language committee (IST/5) and its Fortran panel (IST/5/-/5), and the US Fortran committee PL22.3 (aka J3). BCS has supported the UK contribution to the development of international Fortran standards since 2003. The initial case from 2002 is at https://fortran.bcs.org/2003/devrep03.htm and subsequent annual reports are linked from https://fortran.bcs.org/standards/stanhome.php. Historically BCS has contributed to the costs of members attending BSI and international meetings while much discussion of development work takes place continuously via email. The BSI Fortran panel and the BCS Fortran Specialist Group make every effort to represent the UK as a whole at international meetings.

2. Activity 2020-2021

Brian Friesen, from Lawrence Berkeley National Laboratory has been elected as the J3 chair.

2.1. J3 meeting #223

Four FSG members participated in this meeting on 22-23-FEB and 1-2-MAR-2021 via Zoom. Work towards F202X progressed on enumeration types, integration with ISO/IEC 60559:2020, SPLIT and SYSTEM_CLOCK intrinsics, C interop features and multiple other small items. In addition four interp requests were passed.

2.2. WG5 meeting

Five FSG members participated in the joint J3/WG5 2021 meeting. on 21-23 and 28-30-JUN-2021 via Zoom. The main aim of the meeting was to progress on Fortran 202X outstanding features. Significant progress was made on conditional expressions syntax and edit (PL22.3 21-157r2, 21-162r1) and protected types and components specifications and syntax (PL22.3 21-168, 21-169r2). Several small clarifications and fixes have been introduced, such as C interoperability examples (PL22.3 21-107r2), improved security of type-bound elemental functions (PL22.3 21-135r1), NAMELIST inside BLOCK (PL22.3 21-136r1), NOTE on the coarray memory model (PL22.3 21-142r2). Multiple editorial changes were also made.

Extensive discussion of F202Y generics has taken place. This is a very large feature, and the committee is still far from reaching a consensus on what use cases it should address and how it should be implemented.

Multiple interpretation requests for ISO/IEC 1539-1:2018 have been passed by PL22.3, mostly on collective subroutines, such as CO_BROADCAST and CO_REDUCE for objects of derived type with allocatable and pointer components, and for polymorphic argument (PL22.3 21-137, 21-139r1, 21-150, 21-151r1, 21-167r1), but also on specification inquiry (PL22.3 21-146r1) and on access to internal procedure in interface body (PL22.3 21-138r1).

Since that meeting the Editor has produced the updated WD (PL22.3 21-007r2), and the Editor's report for it (PL22.3 21-171). The Editor also issued J3 Fortran interp letter ballot #37 (PL22.3 21-173), which is due by 7-OCT-2021.

The updated strategic plan is in WG5 N2185. The resolutions from the meeting are in WG5 N2186. The meeting minutes are in WG5 N2187. The WG5 business plan is in WG5 N2190. The Project Editor remains Malcolm Cohen (UK Fortran panel member). The updated target dates for the revision of ISO/IEC 1539-1-2018 Fortran - Part 1: Base language. are: CD DEC-2021, DIS DEC-2022, and Publication JUL-2023.

AITS funding

Due to the ongoing pandemic, there were no requests for AITS funding in the reporting period.

Conclusion

The UK continues to play a major role in the development of the Fortran language. The UK continues to provide the project editor, a major undertaking, and the email administrator, plus (usually, but appointed on an ad hoc basis) the minutes secretary and the editor of the Technical Corrigenda. Fortran development papers, other than draft standards, are open to all interested. WG5 and J3 documents are available from https://wg5-fortran.org and https://j3-fortran.org respectively.

The Group is very grateful for the continuing BCS contribution to this project.

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