



Job Title: Research Software Engineering Specialist
Grade: Grade 7
Salary: £34,804 to £40,322 per annum
Department: IT Services
Hours/Contract: Full-time and Fixed term until 31 March 2023
Reference: 1961

Role Purpose

The role will focus on providing software engineering support for the DiRAC Data-Intensive Service, HPE’s ARM Catalyst programme as well as the HPE “Cadet” system (to be delivered later this year).

This post will include being a member of DiRAC’s virtual RSE Team, along with colleagues from the Universities of Edinburgh, Durham and Cambridge, providing software development support to the UK Astrophysics community. This may include porting, profiling, optimizing or enhancing existing codes. The postholder will contribute to reports, present findings at conferences and help provide technical assessments for DiRAC project applications. Working on porting, optimizing and developing code for ARM-based servers, in conjunction with Catalyst industrial partners (HPE, ARM, SuSE and Mellanox) as well as other Catalyst partner sites (Universities of Bristol and Edinburgh).

Resources Managed

Occasionally the role may involve supervision to placement students or Junior RSEs.

Main Duties and Responsibilities	% Time
<p>Software Engineering responsibilities</p> <ul style="list-style-type: none"> To carry out all necessary software development, optimization and modernization, including fully documenting approaches and solutions. To work closely with researchers to scope and cost software engineering support for research grant applications, assisting with writing technical specifications where required. To develop good working relationships with the Research Service Team in the Library to ensure that solutions provided to researchers meet University criteria for software and open data. To develop and deliver training workshops for researchers to enhance the software development skills of staff and to promote best practice in software development. 	60
<p>Other Responsibilities</p> <ul style="list-style-type: none"> To proactively bring the service to the attention of researchers, engaging with potential new users, assisting them to investigate how their research might benefit from the service, including running workshops, 1:1 meetings etc., ensuring all subject areas are covered. To advise the Academic Oversight Group on the prioritisation and selection of projects to be worked on. This will include: 	40





<ul style="list-style-type: none"> ○ Meeting with individual researchers or research groups and spending time understanding the nature of the research problem. ○ Performing initial profiling of codes to identify bottlenecks and hotspots. ○ Preparing short reports on proposed work to improve code performance or to develop new code, including estimates of the time required. ○ Noting agreed actions and priorities and feeding back to researchers. ○ Reporting on completed projects outlining the development work undertaken, including appropriate metrics to demonstrate performance improvements achieved (e.g. efficiency, speed-up, scalability). ● Represent the service at meetings within the University such as Division team meetings, and College Research Committee meetings. ● Engage with relevant external bodies such as equivalent software engineering teams within the HE sector or the Software Sustainability Institute to ensure up-to-date knowledge of sector initiatives in relation to software and research data, and wider software developments. ● Other duties as required from time to time by line manager. 	
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Internal and External Relationships

Internal relationships

- Work collaboratively with ITS & other colleagues to ensure alignment & effective implementation of a planned Research Software Engineering Service.
- Work closely with the Research and Enterprise Division (for instance when helping researchers prepare grant applications, or commercialization of software and services).
- Work closely with IT Services, the Library and Information Assurance Services on research data issues (e.g. data security, data classification, appropriate curation of data).
- Report to the ReSET Academic Oversight Group in relation to the business of the University Research Strategy, Performance and Policy Committee.
- Liaise with researchers and academic groups, as well as senior academics with research lead responsibilities (e.g. Heads of Departments, Director of Research, etc).

External relationships

- With relevant external bodies and similar teams elsewhere in sector.
- DiRAC RSE and Technical Working Group
- HPE, ARM and Catalyst partner sites





Planning and Organising

- Report on progress to AOG and line managers.
- Plan own workload on a short, medium and long-term.
- Lead on the production and delivery of the reports and notes from meetings as required.

Qualifications, Knowledge and Experience

Essential

- A strong educational background to at least primary degree level in a computational subject *

Desirable

- PhD in a computational subject or equivalent professional experience (e.g. several years of experience as a research programmer in an industrial or academic setting)
- Experience of working in an academic research computing environment
- Experience of working in a research intensive HEI
- Experience of developing or running software services for academics
- Demonstrated research experience in a computational subject *
- Demonstrated track record of research software development and the use of such software to produce research outputs (e.g. refereed publications) *

Skills, Abilities and Competencies

Essential

- 3 or more years' experience developing software to run on HPC
- Experience with one or more of the following languages: Fortran, C, C++
- Experience with one or more of the following: MPI, OpenMP, CUDA, PGAS
- Knowledge of parallel numerical algorithms and libraries
- Enthusiasm and ability for learning new programming languages/APIs as required *
- Good technical diagnostic skills
- Experience of version control software
- Ability to work flexibly and under pressure, and to use your own initiative
- Ability to work either on your own or as part of a close-knit team
- Excellent time management; ability to prioritise in line with requirements *





- Excellent interpersonal and communication skills, and the ability to work closely and effectively with academics at all levels of seniority *
- Keen interest in research and willingness to engage with researchers in a range of disciplines (through discussion and/or reading publications) at sufficient depth to be able to provide software which fulfils their specific requirements *
- Excellent verbal communication and presentation skills and the ability to explain complex ideas to audiences with a range of background knowledge *
- Excellent written communication skills *

Desirable

- Experience in using debugging and performance profiling tools (Intel vtune, ARM Allinea)
- Experience of Linux Systems Administration
- Experience in other interpreted languages (e.g. Python, Perl, PHP, R) *
- Experience of Continuous Integration
- Experience of software profiling *
- Experience of mentoring and leading other research programmers either formally or informally *

**Criteria to be used in shortlisting candidates for interview*

Reason for Fixed Term Contract

The reason for the fixed term contract is stated in section 1.9 in the summary of contractual terms in your contract of employment.

Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

VITAL

The University encourages all staff to live our [VITAL values](#) which are:

Valuing People, Innovators, Together, Accountable, Leaders.

Equality and Diversity

We believe that equality, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equality support our efforts to attract a diverse range of





high quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equality, diversity and inclusion.

