Job Title: Research Software Engineering Specialist
Grade: 7
Salary: £34,179 to £39,609 per annum
Department: IT Services
Hours/Contract: Full time, fixed term to 28 February 2022
Reference: 627

Role Purpose
You will join our Research Software Engineering team (ReSET). ReSET is based in our IT Services Department where it is part of a larger Research Computing Team. The Research Computing Team delivers a range of services including local and national High-Performance Computing (HPC) facilities, a multi-petabyte Research Data Storage service, virtualized PaaS capability for hosting standard or bespoke servers, as well as a range of research support tools such as wikis, blogs and version control.

Resources Managed
The Team manages an estate of 900 servers, with 24000 CPU cores across three HPC systems and 4.5PB data.

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<thead>
<tr>
<th>Main Duties and Responsibilities</th>
<th>% Time</th>
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<tbody>
<tr>
<td><strong>Software Engineering responsibilities</strong></td>
<td>60</td>
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<tr>
<td>• To carry out all necessary software development, optimization and modernization, including fully documenting approaches and solutions.</td>
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<td>• To work closely with researchers to scope and cost software engineering support for research grant applications, assisting with writing technical specifications where required.</td>
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<td>• 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.</td>
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<td>• To develop and deliver training workshops for researchers to enhance the software development skills of staff and to promote best practice in software development.</td>
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<td><strong>Other Responsibilities</strong></td>
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<td>• 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.</td>
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<td>• To advise the Academic Oversite Group on the prioritisation and selection of projects to be worked on. This will include:</td>
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Job Summary

a) Meeting with individual researchers or research groups and spending time understanding the nature of the research problem.
b) Performing initial profiling of codes to identify bottlenecks and hotspots.
c) Preparing short reports on proposed work to improve code performance or to develop new code, including estimates of the time required.
d) Noting agreed actions and priorities and feeding back to researchers.
e) 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.

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).
- 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, or equivalent, in a computational subject*
- Experience with one or more of the following languages: Fortran, C, C++*
- Experience with one or more of the following: MPI, OpenMP, CUDA, PGAS*
- Experience of version control software*

## 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) *
- 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

# Skills, Abilities and Competencies

## Essential
- Significant experience developing software to run on HPC
- Knowledge of parallel numerical algorithms and libraries*
- Enthusiasm and ability for learning new programming languages/APIs as required
- Good technical diagnostic skills
- 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*
Job Summary

Desirable

*Criteria to be used in shortlisting candidates for interview

**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.