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| Job Description | JD088 v7.0 |
| Research Software Developer | Grade: 7 |
| Department: Research IT Services | Location: UCL Bloomsbury campus, London |

#### Reports to

**LONDON’S GLOBAL UNIVERSITY**

Senior Research Software Developer

No direct reports.

#### Context

UCL is a world leading teaching and research university, often ranked in the top ten in the world with an annual turnover of well over £1 billion. Part of UCL’s vision is to take on the hardest global challenges.

In order to deliver this vision UCL has an Information Services Division (ISD) of over 500 staff supplying teaching, research and professional services support. The division covers all central IT services and is split into 8 departments that provide services for local support, operations, project delivery, governance and security.

Within ISD, Research IT Services (RITS) focuses on supporting one of the key missions of the university. We aim to ensure that facilities and services for UCL’s researchers are indeed world leading.

The Research Software Development Group works with researchers across UCL to build and maintain readable, reliable and efficient research software. The team is friendly and diverse, with a range of backgrounds and specialist skill sets represented. There are good opportunities for personal development and career progression within the group, in both technical and managerial tracks. Funding for training and conference travel is also readily available.

#### Main purpose of the job

* Research Software Developers collaborate with research colleagues from across UCL to construct, improve, and maintain codes used for modelling, analysis, simulation and more.
* They are required to rapidly assimilate research context through publications and conversation with research groups, understand the computational algorithms, requirements and interfaces needed within the research effort, and construct high-quality software for research colleagues which will result in a sustained impact on their research programme.
* They provide consulting on software practices, techniques, design, and architecture to research groups, helping to build well-structured and maintainable research software.
* They contribute to strengthen and widen the various technical specialisms within the team, such as data science, visualisation, parallel programming, and web applications.
* They teach research staff and students the effective use of software for research, through hands-on training sessions covering topics in programming and software engineering best practice.
* They build and maintain relationships within the research and e-Infrastructure communities in UCL and beyond, seeking opportunities to contribute to research, and to generate proposals for new research projects and funding.
* They support the release and dissemination of UCL research software.
* They may progress to a Senior Research Software Developer or Data Science Specialist role.

#### Duties and responsibilities

The balance of time between activities will vary depending on the current project portfolio for the team and individual proclivities. The percentages here give an indication of the approximate split, and should not be taken as definitive.

##### Research programming (70%)

* Collaborate with research colleagues from across UCL to construct, improve, and maintain codes used for modelling, analysis and simulation in UCL research.
* Contribute to the delivery of collaborative research programming projects, organising meetings, and scheduling own work, in conjunction with the project manager.
* Rapidly assimilate research context and understand the computational algorithms, requirements and interfaces involved in a research programming project.
* Contribute to projects on an intellectual as well as technical level.
* Design and construct high-quality software for research colleagues which will result in a sustained impact on their research programme(s).
* Follow good software engineering and reproducible research practice and disseminate this practice to collaborating partners.
* Assist colleagues in analysis and problem-solving tasks, sharing knowledge and expertise with team members.
* Depending on their particular focus:
  + Maximise insight from the wealth of data generated across all disciplines, coding for data analysis, computational statistics, machine learning and big data engineering.
  + Improve reliability and performance for parallel codes, while maintaining readability and structure, on UCL-owned and other High Performance Computing platforms.
  + Develop effective user interfaces to allow members of the public or the research community to interact with research software.
  + Provide generalist research software expertise relevant to each project.
* Support the release and dissemination of UCL research software, through open source, scholarly, and commercial channels.
* Explain and document software created with the team’s involvement, contributing to research papers published in the academic literature, project reports and case studies, and code documentation and manuals.
* Provide online and face-to-face user support for software we create or maintain to both UCL and external users.
* Extend expertise in many areas of computational research through independent study and training courses.

##### Provide training relating to research software engineering (10%)

* Train UCL research staff and students in the effective use of software for research.
* Develop training materials in research computing, suitable for a range of audiences with a very variable degree of computational experience.
* Advise researchers on software practices, techniques, design, and architecture.

##### Engage with and contribute to wider research software community (10%)

* Build and maintain relationships within the research and e-Infrastructure communities in UCL and beyond, actively seeking opportunities for collaboration with researchers.
* Contribute to community activities such as seminars and networking events.
* Attend conferences and community events in a variety of software engineering/research computing fields in the UK and abroad.
* Contribute ideas, experience and thinking to technical working groups in and beyond UCL.

##### Maintain and support research software development infrastructure and services (5%)

* Maintain and support the state-of-the-art infrastructure and services needed for effective research software engineering, in areas such as continuous integration, version control, and code review.
* Maintain and manage systems and servers used to deliver software development infrastructure services.
* Author and maintain documentation relating to software development infrastructure services.
* Assist Research IT Services colleagues in the delivery of other departmental services.
* Contribute to the wider ecosystem of support for computational research in UCL, working with departmental IT staff and ISD colleagues to help build and maintain integrated systems and services that meet the needs of researchers.
* Contribute to wider departmental and divisional activities through discussions and meetings.

##### Flexible personal allocation (5%)

* A divisional initiative for staff to spend time on their own projects, e.g. contributing to open source software or learning a new technology.

# Person Specification

Note that candidates are often appointed without meeting the ‘Desirable’ characteristics.

| Criteria | Essential or Desirable | Assessment method  (Application/Interview) |
| --- | --- | --- |
| **Qualifications, experience and knowledge** |  |  |
| Graduate degree with a significant computational component. | Essential | A |
| PhD degree in a computationally based field or equivalent professional experience (significant experience programming for Research and Development in an academic or industrial setting). | Essential | A/I |
| Experience of analysing, researching and solving complex programming problems. | Essential | A/I |
| Significant experience with one programming language used for research (e.g. C++, Python, C#, R, Java, Javascript, Fortran, Julia) and conversant with at least one more. | Essential | A/I |
| Knowledge of and commitment to software development best practise including issue tracking, testing, documentation, version control and continuous integration. | Essential | A/I |
| Experience using Unix-based operating systems and Unix system tools and utilities. | Essential | A |
| Knowledge of agile software development methodologies, such as SCRUM or XP. | Desirable | A |
| Experience designing and/or delivering training courses. | Desirable | A |
| Advanced knowledge of applied mathematics. | Desirable | A |
| Experience of working in a service oriented environment. | Desirable | A/I |
| Experience of technologies supporting software re-use and deployment. | Desirable | A/I |
| Knowledge of and experience with common software architectural patterns. | Desirable | A/I |
| **Skills and abilities** |  |  |
| Ability to rapidly acquire fluent knowledge of new programming languages, libraries and platforms. | Essential | A |
| Excellent written and verbal communication skills including the ability to effectively present complex or technical information to a range of audiences. | Essential | A/I |
| Ability to communicate with researchers, to ensure their research vision and/or research questions are supported by the software you develop. | Essential | A/I |
| Ability to work collaboratively and as part of a team. | Essential | A/I |
| Ability to work under own initiative. | Essential | A/I |
| **Personal attributes** |  |  |
| Desire to keep up-to-date and learn about new developments in computational research. | Essential | A/I |

# Appendices

#### Conditions of service

The normal hours of work are 36.5 hours per week. The annual leave entitlement is 27 days per year, plus 6 College closure days, plus public holidays.

UCL is committed to flexible working to support a healthy work life balance. A number of types of flexibility will be considered for this role including remote working, compressed/flexible hours, and/or a part-time appointment.

#### Additional information

The job description reflects the present requirements of the post, and as duties and responsibilities change/develop, the job description will be reviewed and be subject to amendment in consultation with the post holder. The post holder will carry out any other duties as are within the scope, spirit and purpose of the job as requested by the line manager or Head of Department/Division.

The post holder will actively follow UCL policies including Equal Opportunities policies and be expected to give consideration within their role as to how they can actively advance equality of opportunity and good relations between people who share a relevant protected characteristic and people who do not share it.

The post holder will maintain an awareness and observation of Fire and Health and Safety Regulations.

The post holder must ensure organisational compliance and conformance with the Data Protection Principles. All data, whether stored electronically or by other means must be processed in accordance with the Data Protection Act 1998.