Research software programming and development survey

Introduction

Do you write, develop or maintain programs, scripts or other code as part of your research or to support the research of others? The University's Research Data Service is conducting a survey to find out more about how our researchers, research students and support staff write code and develop and manage research software. We will use this information to assess the nature and extent of research programming and software development activities in the University, and to understand how we might provide guidance, training and support.

We would like to hear from any member of staff or research student who is involved in or supports research at the University, and writes computer code as part of their research or to support the research of others. This could include:

- writing code and using software for numerical and statistical analysis;
- creating and contributing to computational models or simulations;
- conducting Text and Data Mining (TDM) and content analysis;
- creating and contributing to software distributed as a product or implemented as a service;
- creating data visualisations;
- using markup languages to structure and render content.

The survey should take about 10-15 minutes to complete. It will remain open until Friday 15th December.

If you have any questions about the survey or would like to discuss issues of research software support, please contact Robert Darby, Research Data Manager, at

r.m.darby@reading.ac.uk.

Thank you for taking part in this survey.

Using your personal information

This survey may be completed anonymously, but if you are willing for us to contact you with any follow-up questions and would like to be kept informed about developments in research software support at the University, you can provide your name and contact details at the end of the survey.

The University of Reading may use the information collected in this survey for the following purposes:

- to consider and share internally evidence about current research software practices and service needs;
- to keep in touch with you about research software support at the University;
- to share information publicly in an anonymised form.

We will not disclose any personal information to anyone outside of the University of Reading, unless required to do so by law or with your consent. Any information that may be shared will be aggregated and anonymised to protect your identity. Information provided will be stored securely and deleted when no longer needed.

For further information on how your information is used, and your rights to access information we hold on you, please contact imps@reading.ac.uk.

About you

What is your role? ✱ *Required*

- ○ Professor
- ○ Associate Professor
- ○ Lecturer/Research Fellow
- ○ Research assistant/postdoctoral researcher
- ○ Research student
- ○ Research Software Engineer
- ○ Other

If you selected Other, please specify:

What is your School/Institute/Function? ✱ *Required*

- ☐ Centre for Integrative Neuroscience & Neurodynamics
- ☐ Centre for Literary & Multilingualism
- ☐ Henley Business School
- ☐ Heritage & Creativity Institute
- ☐ Institute for Environmental Analytics
- ☐ Institute for Food, Nutrition and Health
- ☐ Institute of Education
- ☐ Information Technology
- ☐ School of Agriculture Policy & Development
- ☐ School of Archaeology Geography & Environmental Science
- ☐ School of Arts and Communication Design
- ☐ School of Biological Sciences

- [ ] School of Chemistry Food & Pharmacy
- [ ] School of Humanities
- [ ] School of Law
- [ ] School of Literature and Languages
- [ ] School of Mathematical Physical & Computational Sciences
- [ ] School of Politics Economics & International Relations
- [ ] School of Psychology & Clinical Language Sciences
- [ ] School of the Built Environment
- [ ] Technical Services
- [ ] Thames Valley Clinical Trials Unit
- [ ] Walker Institute
- [ ] Other

If you selected Other, please specify:

Are you a member of a Research Division? ✱ *Required*

- ○ Yes
- ○ No

If you answered Yes, please select your Research Division

Have any funders funded research or programming activities that have involved you writing code? Please select all that apply ✱ *Required*

Please select at least 1 answer(s).

- [ ] AHRC
- [ ] BBSRC
- [ ] EPSRC
- [ ] ESRC
- [ ] MRC
- [ ] NERC
- [ ] STFC
- [ ] European Commission
- [ ] Wellcome Trust
- [ ] No funder
- [ ] Other

If you selected Other, please specify:

How you create and manage code

In what ways do you work with code? Please rate each on a scale from 1-5 (1=Never; 2=Rarely; 3=Sometimes; 4=Often; 5=Most/all the time) ✱ *Required*

Please don't select more than 1 answer(s) per row.

Please select at least 1 answer(s).

	1 Never	2 Rarely	3 Sometimes	4 Often	5 Most/all of the time
Writing code and using software for numerical and statistical analysis	☐	☐	☐	☐	☐
Creating and contributing to computational models or simulations	☐	☐	☐	☐	☐
Conducting Text and Data Mining (TDM) and content analysis	☐	☐	☐	☐	☐
Creating and contributing to software distributed as a product or implemented as a service	☐	☐	☐	☐	☐
Creating data visualisations	☐	☐	☐	☐	☐
Using markup languages to structure and render content	☐	☐	☐	☐	☐

Which programming, scripting or markup languages do you use? Please select all that apply ✱ *Required*

Please select at least 1 answer(s).

- [ ] C
- [ ] C++
- [ ] Fortran
- [ ] HTML/CSS
- [ ] IDL
- [ ] Java
- [ ] JavaScript
- [ ] LabVIEW
- [ ] LaTeX
- [ ] Mathematica
- [ ] MATLAB
- [ ] PHP
- [ ] Python
- [ ] R
- [ ] Shell Scripting
- [ ] SPSS
- [ ] SQL
- [ ] XML
- [ ] Other

If you selected Other, please specify:

How many projects/activities involving programming or software development are you

working on at the moment? ✱ *Required*

- 0
- 1
- 2
- 3
- 4
- More than 4

How you create and manage code

Please answer the remaining questions in this section with reference to one current or recent project or activity that involves programming or software development.

Where do/did you maintain your code? Please select all that apply ✱ *Required*

- [ ] On my own computer (not University-owned)
- [ ] On a computer on the University network
- [ ] On a department cluster
- [ ] Tier 2/regional HPC centre
- [ ] National HPC centre (ARCHER, JASMIN, DiRAC)
- [ ] Online code repository (e.g. GitHub, Bitbucket)
- [ ] Other

If you selected Other, please specify:

Where do/did you run your code? Please select all that apply ✱ *Required*

- [ ] On my own computer (not University-owned)
- [ ] On a computer on the University network
- [ ] On a department cluster
- [ ] Tier 2/regional HPC centre
- [ ] National HPC centre (ARCHER, JASMIN, DiRAC)
- [ ] Online code repository (e.g. GitHub, Bitbucket)
- [ ] Other

If you selected Other, please specify:

If you use(d) a code repository (e.g. GitHub, Bitbucket) or version control software (e.g. Git, Mercurial, Subversion) to manage your code, please specify

Do/did you test your software? ✱ *Required*

- Yes
- No

If you answered Yes, please briefly describe your testing methods and any tools you use(d), e.g. for automated testing

How you create and manage code

Do/did you use a bug tracking system? ✱ *Required*

- Yes
- No

How thorough is your code documentation and commentary? ✱ *Required*

- My code is not documented or commented
- Basic – enough for me to make sense of it
- Fairly thorough – enough for someone else working in the same group to understand and use
- Thorough – fully and formally documented using industry best practice

Have you formally released code? ✱ *Required*

- Yes
- No

If you answered Yes, please explain briefly how this works and/or provide a link to available release information

How you share code

In this section you will be asked about how you share code during a project/programming activity, and whether and how you make code publicly available in support of project results/at the end of a project.

Please answer the following question with reference to one current or recent project/activity that involves programming or software development.

Do/did you share your code during the project/programming activity? ✱ *Required*

- ○ Yes
- ○ No

How do/did you share your code during the project/activity? Please select all that apply

- ☐ With members of the project team
- ☐ With a limited group outside the project, e.g. developer/user community
- ☐ With individuals, on reasonable request
- ☐ Publicly via a code repository
- ☐ Publicly via a website

How you share code

Please answer the remaining questions in this section with reference to a recently completed project or programming activity. If you have not made code from any completed projects/activities publicly available, you can select N/A in answer to the next question and skip this section.

Does your code support any published results for this project/activity? ✱ *Required*

- ○ Yes
- ○ No, the published results did not need code to support them
- ○ No, the completed project did not produce any publications
- ○ N/A – I have not made code publicly available

If you answered Yes, what information did you provide about how to access the code in the publication(s)?

- ○ URL to code repository or website
- ○ DOI to archived version of code in a digital repository
- ○ Described algorithms in publication, but didn't provide code
- ○ Contact author
- ○ No information

How you share code

At the end of your project or activity, did you make your code publicly available? ✱
Required

- Yes
- No

How you share code

What were your reasons for not making the code available? Please select all that apply ✱
Required

- [ ] It was unlikely to be of interest to anyone
- [ ] It was no-one else's business
- [ ] It would have taken too much effort to clean it up
- [ ] I didn't know of a suitable sharing mechanism
- [ ] I was worried it might contain errors
- [ ] I no longer had the relevant version
- [ ] There were too many dependencies
- [ ] There were sensitivity concerns (e.g. commercially sensitive because of collaboration with industrial partner)
- [ ] Other

If you selected Other, please specify:

How you share code

Where did you make your code available? Please select all that apply and add names of services or URLs in the text box ✱ *Required*

Please select at least 1 answer(s).

- [ ] Public code repository (e.g. GitHub, Bitbucket)
- [ ] Data or other research outputs repository
- [ ] Website
- [ ] Other

Please include names of services, URLs, or details of Other solutions here

How did you license the code? ✱ *Required*

- ○ No licence
- ○ Apache License 2.0
- ○ BSD License
- ○ BSD License 2.0
- ○ Free BSD License
- ○ GNU AGPL 3.0
- ○ GNU GPL 3.0
- ○ GNU LGPL 3.0
- ○ MIT License
- ○ Mozilla Public License 2.0
- ○ The Unlicense
- ○ Other

If you selected Other, please specify:

Please explain the reasons for this choice

Did you use virtualization or container technology to package up the environment in which your code runs? ✱ *Required*

- Yes
- No

If you answered Yes, what technology did you use?

Software services

Do you provide a service based on code you have created? If you provide more than one software service, please answer with reference to one recently-developed service. ✱
Required

- ○ Yes
- ○ No

If you answered Yes, please provide the service URL or other reference information

Software services

On what servers do you deploy your code? Please select all that apply

- [ ] My own servers
- [ ] University servers managed by IT
- [ ] Other University servers
- [ ] Servers at collaborators' institutions
- [ ] JASMIN
- [ ] Virtual machines from a cloud provider (please give details of provider below)
- [ ] Servers hosted by a commercial hosting company
- [ ] Other

If you selected Other, please specify:

Please explain the reasons for your choice and add any further details

Skills, training and support

In this section we ask how you have acquired knowledge and skills in programming and software development, and aim to learn more about your requirements for training and support.

In what contexts have you trained in programming/software development? Please select all that apply ✱ *Required*

- [ ] Self-taught/learnt on the job
- [ ] Workshop/training course (e.g. Software Carpentry)
- [ ] Undergraduate
- [ ] Postgraduate
- [ ] Other

If you selected Other, please specify:

If you are a member of a research software engineering community, user group or support network (e.g., Research Software Engineers, ARCHER Champions), please provide details below

If you need to acquire new skills or solve a problem, how do you typically go about this? Where possible please identify any particular resources, organisations, people etc. you use/consult

What particular challenges do you experience in programming, developing and managing software, etc.?

If you could receive any training or attend a workshop to improve your programming or software development/management knowledge and skills, what would it be? Please briefly describe and explain your reason

Skills, training and support

Would you interested in being part of a local support network for those working with code/developing software? Such a network might provide a means to access and share knowledge and expertise locally, organise workshops and periodic meetings, and represent the interests of staff and research students working with software in the University

✱ *Required*

- ○ Yes
- ○ No

If you answered Yes, what do you think is the most useful thing such a network could do?

Do you think the University should support researchers and other staff who are writing code and developing software as part of their research or to support the research of others, and if so, how?

Follow-up

If you are willing for us to contact you about this survey and would like us to keep you informed of developments in research software support at the University, please provide your name and email address

Thank you

Thank you very much for taking the time to complete this survey. Please look out for further news when we make the findings of our survey known. If you have any questions or comments in the meantime please email Robert Darby at r.m.darby@reading.ac.uk.

Key for selection options

3.a - If you answered Yes, please select your Research Division

Agri-Food Economics and Social Science
Archaeology
Art
Biomedical Sciences and Biomedical Engineering
Built Environment
Business Informatics Systems and Accounting
Chemical Sciences
Classics
Climate
Earth Observation and Space
Ecology and Evolutionary Biology
Economics
Education Language Learning
English Literature and Language
Environmental Science
Film Theatre and Television
Food and Nutritional Sciences
Global Development
History
ICMA
International Business and Strategy
Language Development and Ageing
Law
Leadership Organisations and Behaviour
Marketing and Reputation
Mathematics and Statistics
Modern Languages and Linguistics
Perception Cognition and Nutrition

Pharmacy
Philosophy
Politics and International Relations
Psychopathology and Affective Neuroscience
Real Estate and Planning
Sustainable Agricultural and Food Systems
Typography and Graphic Communication
Weather