3. IIASA Profiles

3.1. Research Software Programmer (S1)

a. Individuals doing software development under the supervision of a more senior Research Software professional, who fulfill the necessary criteria.

3.2. Criteria

a. Necessary criteria:

01. Is technically qualified in the relevant field of software development
02. Demonstrates a basic understanding of the area of research in which the software professional works or is going to work
03. Is able to perform requisite source code development and/or database management (if necessary) and/or analytical tasks under supervision
04. Is capable of critical analysis, evaluation, and synthesis of new and complex ideas
05. Has good language, communication, and interpersonal skills, especially in the IIASA context
06. Provides high quality software development and accompanying documentation

b. Desirable criteria:

01. Demonstrates the ability to learn and apply new knowledge and software development tools and methods
02. Is able to explain and present the problem solutions and value thereof to colleagues who are not professional programmers
03. Demonstrates collaboration and networking skills
04. Shares and demonstrates IIASA Core Values
05. Develops and publishes high-quality open-source code

3.3. Research Software Developer (S2)

a. Individuals with sufficient qualifications/experience, able to independently carry out software development under supervision of a scientist who leads the project from the scientific side and who fulfill the necessary criteria.

3.4. Criteria

a. All criteria of Research Software Programmer (S1) plus:

b. Necessary criteria:

01. An excellent understanding of a field of software development and mastery of software development associated with that field
02. Demonstrates initiative, provides high quality software development
03. Articulates, where relevant, several possible software solutions which align with, and contribute to, the research project in which the developer is involved and which are aligned with IIASA priorities, where relevant
04. Demonstrates the ability to conceive, design, and implement software development projects
05. Is able to develop and publish high-quality open-source code
06. Demonstrates critical analysis, evaluation, and synthesis of new and complex ideas

07. Understands the value of their software development work in the context of current challenges for the IIASA research and the global software developers' community
08. Lives up to IIASA Core Values
09. Demonstrates continuous upgrade of their own skills and awareness of industry trends

c. Desirable criteria:

01. Participates in the training and capacity building activities of IIASA and offers training to others
02. Is able to produce contributions to the IIASA and open-source community
03. Understands broader software development funding and grantmaking environment
04. Supports the fundraising through externally funded research projects
05. Ability to provide in-depth evaluation and analysis of relevant technological issues
06. Broad experience in designing, programming, and implementing information systems
07. Develops and publishes high-quality open-source code

3.5. Research Software Engineer (S3)

a. Individuals carrying out design and development, and participating in fundraising.

3.6. Criteria

a. All criteria of Research Software Developer (S2) plus:

b. Necessary criteria:

01. A recognized leader in the field of software development, demonstrating the highest level of software development
02. Articulates a software solution vision at the highest level which aligns with, and contributes to, IIASA priorities
03. Promotes open-source software and solutions
04. Demonstrates the ability to conceive, design, manage, and implement complex software development projects
05. Is skilled at analysis, design, development, and maintenance of significant source code bases supported by relevant community. Has evidence of leading, building, and maintaining developer communities around one or more code bases
06. Demonstrated evidence of contributing significantly to funding of development (e.g., grants, industry collaborations, etc.)
07. Is able to lead a team for software solutions development purposes
08. Is a role model of the IIASA Core Values
09. Must have an external peer network to benchmark against
10. Mentoring younger colleagues and ensuring compliance with best practices
11. Contribute towards developing, designing and maintaining best practices and guidelines for scientific software development in IIASA

c. Desirable criteria:
   01. Is able to create an innovative, creative, and nurturing working environment for a software development team
   02. Having publications to present novel approaches in software development