Review of Package Managers for Bioinformatics Software Distribution

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Abstract

Introduction

Discussion

Existing problems with software distribution and installation

- root access limitations
- reproducibility of findings
- version conflicts
- dependency resolution

Definitions and explanations of distribution system types

- package managers
  - definition
  - benefits for the developer
    - mature technology - higher degree of familiarity
    - allows dependency specification (including versions) -limitations for the developer
    - can't always use to install missing dependencies for end-user
  - benefits for the end-user
    - package size is minimal (dependencies aren't duplicated)
    - installs missing dependencies
  - limitations for the end-user
    - not always accessible (unless admin user)
    - can't install multiple versions of same software
- containerization
  - definition
  - "Why containers?" Comic "Why containers?" by Julia Evans
  - benefits for the developer
    - include specific versions of dependencies
    - known running environment
      - fewer test variables
      - reproducibility of results
  - limitations for the developer
    - learn a new system instead of focusing on research
  - benefits for the end-user
    - no installation (except possible runtime)
    - no dependency issues
    - sandbox provides computer system security
  - limitations for the end-user
    - container size
    - duplication of dependencies
    - root access requirement to install runtime
    - configuration in cluster
- centralized repositories
  - definition
  - benefits
    - known download site
    - hosting is taken of
  - limitations
    - repo specific restrictions

Glossary

Acknowledgements

Author Contributions

References

Tables

Distribution System Name	URL	Publication	Type	Licensing
AppImage	appimage.org	something	blah	whatever