Software stack for Research writing

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Chinmaya Dehury
LECTURER OF DISTRIBUTED SYSTEMS
M&C LAB,
INSTITUTE OF COMPUTER SCIENCE
UNIVERSITY OF TARTU, ESTONIA

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Research/academic Writing

Academic writing
• written by professionals
• Specific to a field
• edited/reviewed by the authors' peers
• often take years to publish.
• language is formal
• list of references

Examples

Non-academic Writing
• written for the mass public
• published quickly
• language maybe informal and casual
• no reference list

Examples
Newspapers, Magazine articles, Personal or business letters, novels, websites
Why is this lecture so important?

Fixed content, but the look/format is different

Example:

Data Pipeline Architecture for Serverless Platform

Chinmaya Delury*, Pelle Jakobsson†, Satish Narayanamirela, Vaidehi Thimmaiah, and Mohsen Zamani

1 University of Tartu, Tartu, Estonia (chinmaya.delury@ut.ee)
2 Athina Technology Center R.A., Athens, Greece (v. thimmaiah@gmail.com)

Abstract. To provide cost-effective cloud resources with high QoS, serverless platforms are introduced that allows for the exact amount of resource usage. On the other hand, it is now common for data management tools to be developed that manage the data from a large number of IoT sources. However, the modern data intensive cloud applications require the power that comes from integrating data management tools with serverless platforms. This paper proposes a novel data pipeline architecture for serverless platform providing assurance for development applications that can be broken into independently deployable, scalable, available, and cost-effective modules and efficiently manage the flow of data between different environments.

Keywords: Serverless computing, Data pipeline, TOSCA, DevOps

1 Introduction

While moving towards more mature utility computing to offer the computing resources on an on-demand basis, we pay-as-you-go pricing model, Cloud Service Providers (CSPs) are designing and developing serverless platforms, such as AWS Lambda, Google Cloud Functions, etc. Here cloud services are broken down to the level of individual functions triggered by different events.

This event-driven computing model uses container technology. For each function, a dedicated container is created that functions as the virtual machine container only to run while the function is being executed and this enables developers and cloud consumers to pay for exact usage of their cloud resources, only at the granularity of hundreds of milliseconds.

In case of data-intensive cloud applications, it is necessary to efficiently handle the flow of large data volume, using different data management tools/technologies, such as Apache HDFS, Apache HBase, and Hadoop. These platforms need to be mature enough to work with the data pipeline technologies. On the other hand, existing data pipeline architectures should be developed for integration purposes to

More examples...
Why is this lecture so important?

Fixed content, but the look/format is different

Example:
Why is this lecture so important?

• Fixed content, but the look/format is different
  • focus should be on content, not the journal’s format
  • Automated typesetting
• Hundreds of references
• Mathematical equations
• Scientific figures
**Software Stack**

**MiKTeX** is a modern TeX distribution for Windows, Linux and macOS.

**TexStudio**: An integrated writing environment for creating LaTeX documents.

MiKTeX is one of the most sophisticated digital typographical systems.

**Overleaf**: A collaborative cloud-based LaTeX editor used for writing, editing and publishing scientific documents.

**Zotero**: Free and open-source reference management software.

**JabRef**: Open-sourced, cross-platform citation and reference management software.

And many more...
Latex

• LATEX is a tool used to create professional-looking documents.
• It is based on the WYSIWYM (what you see is what you mean) idea.
• .tex file extension
• Focus on content, latex will take care of formatting.
  • it separates the content of the document from the style.
• Hundreds of templates available for almost everything from CVs to slideshows.
• Recall HTML: `<b> ... </b>` for bold face font
• In Latex: `\textbf{...}` for bold face font
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And many more...
Overleaf

• A collaborative *cloud-based* LaTeX editor.

• Very easy even for beginner:
  • Goto [www.overleaf.com](http://www.overleaf.com) -> login
  • Select *New Project* -> *Blank Project* -> enter *Project name* -> *Create*

…

…

…

…

Src: [https://www.overleaf.com/learn/latex/Learn_LaTeX_in_30_minutes](https://www.overleaf.com/learn/latex/Learn_LaTeX_in_30_minutes)
Overleaf

Short demo (Only on Overleaf Dashboard, not on Latex)

- Create a new project
  - List of templates (ACM double column template)
  - University of Tartu template (tag: unitartucs)
- **Project Dashboard**
  - Side pane (file Explorer)
  - File Outline
  - New file, new folder, upload
  - Source view -> Rich Text view
  - Online output
  - Goto PDF location in code + goto code location in PDF
- **Review + Share + Submit + History + Chat**
- **Menu**
  - Sync + Spell Check + …..
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And many more...
TexStudio

• Download and Install the full version of MikTex:
  • https://miktex.org/download

• Download and install TexStudio:
  • https://www.texstudio.org/#download

• You may refer this old blog: https://blogchinmaya.blogspot.com/2016/09/how-to-install-texstudio-with-miktex.html

• ....

• ....

• ....
TexStudio

Demo time

Editor Walkthrough

• List of symbols
• Math menu
• Wizards -> Quick tabular
• Wizards -> insert image
• Bibliography menu
• Bib file > insert specific bibliography

Tips:
• %TODO
• Make your project a git repository -> no worry if a paragraph is deleted.
  • Options -> Configure TexStudio -> SVN/GIT -> Use Git -> Check-in after File/Save only -> OK
  • To go back to a point: git reset --hard <commit checksum>
  • Use git log to see all commits
(ACM double column template)

Template:  
https://www.acm.org/binaries/content/assets/publications/consolidated-tex-template/acmart-primary.zip

Src: ACM Primary Article Templates AND Publication Workflow  
(https://www.acm.org/publications/taps/word-template-workflow)
Latex commands

- Figures
- Tables
- Equations
  - Inline
- Bullet and Numbering
- Mathematical Symbols
- Algorithms
- Citations (\cite) and references(\ref + \label)
- Bibliography
  - Get bibtex entry from Google Scholar
  - Get bibtex entry from Zotero
Software Stack

MiKTeX is a modern TeX distribution for Windows, Linux and macOS.

One of the most sophisticated digital typographical systems

A collaborative cloud-based LaTeX editor used for writing, editing and publishing scientific documents.

Free and open-source reference management software

And many more…
Reference management with Zotero

Src: https://www.zotero.org/static/images/home/screenshot-1.4.png
Reference management with Zotero

- Open an Account in www.Zotero.org
  - 300MB storage [Free]
- Download and Install
  - Zotero
  - Zotero Connector for your preferred browser
- Src: https://www.zotero.org/download/

Zotero Connector
- Firefox
- Chrome
- Safari
- Edge

Zotero
- Windows
- MacOS
- Linux

Zotero Cloud
Reference management with Zotero

• Link Zotero Account
• Open Zotero
  • *Edit* -> *Preference* -> *Sync* tab -> *Settings* Tab
  • Under *Data Syncing*, link your account
  • **Bonus**: You may uncheck *Sync full-text content to save some space*
Reference management with Zotero

- Run Zotero
- Under My Library
  - Create a collection

- Open any research article in web browser
  - e.g.: https://ieeexplore.ieee.org/document/9055172
  - Make sure that Zotero Connector is configured
  - Now click on Save to Zotero Extension

- Go to Zotero, you should see the reference entry.
Zotero Dashboard

- Layout (collection pane + item pane + tag selector)
- Library
  - Collections
- Group Library
- For each item:
  - Info + Notes + Tags + Related
- Tag selector
Reference management with Zotero

Demo Content

- Adding an Item manually
- Locate
  - Search an item in google search and others
Better BibTex

• an extension for Zotero to manage bibliographic data
  • Goto https://retorque.re/zotero-better-bibtex/installation/
  • Download and install Better BibTex
Export bibliography

• Open Zotero

• Select one or more items, or a collection

• Right click and select *Export Items* or *Export Collection*
  
  • Format: BibTex
  
  • You may uncheck all “*Translator options*”
  
  • Click on OK
Zotero with TexStudio

• Open TexStudio -> Open required .tex file
  • Position your cursor, where you want to cite the reference(s)

• Open Zotero
  • Select one or more items (or references)
  • Right click -> Better BibTex -> Push references to TexStudio
  • Now at the end you may export the selected references
References

- https://www.midmich.edu/student-resources/lls/library/find-articles/academic-articles
- https://www.geeksforgeeks.org/difference-between-academic-writing-and-non-academic-writing/
- https://www.zotero.org/
- https://www.overleaf.com/project
- https://www.texstudio.org/
- http://www.tug.org/levels.html
- https://texfaq.org/FAQ-latex
- https://www.latex-project.org/
Q&A

unitartu

tartuylkool