



# Masum Billal

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## Education

Fresh Graduate **BSc**, *CSE, Department of Computer Science and Engineering, University of Dhaka, Bangladesh.*

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## Projects and Experience

- 2016 **Data Analysis**, *Web server log analysis and prediction of vulnerability*, Platform: Python, Framework: Django, REST.  
I did this project under **Threat Equation PTE Ltd, Singapore**. Analyzed web server logs to predict attacks on a particular site. For the server logs generated from the plugin, accuracy was 100% with mean absolute error 0% (only for **internal logs**, may be reduced for external ones).
- 2016 **Web Application**, *Dashboard*, Platform: Python and Javascript, Framework: Django, REST, ChartJS.  
My role in this project was to build a dashboard using **Django, REST, ChartJS** that would collect data from the plugin and provide visualization and analysis results in the dashboard.
- 2016 – 2017 **Improving Collaborative Filtering Based Recommender Systems**, *Recommender System*, Platform: Python/C++, BSc Thesis.  
The aim of this thesis was to improve accuracy of recommender systems based on collaborative filtering and develop theory/model for measuring similarity or accuracy or recommended ratings.
- 2016 **Machine Learning**, *A movie recommender system*, Platform: Python, Tools: *pandas, scikit-learn, numpy etc*, In this project I have predicted movie ratings using **Naive Bayes**.  
<https://github.com/fifaboy/rec-mnb>
- 2016 **E-commerce web application**, *Otaku Store*, Platform: Python, Framework: Django.  
I worked on this project for an academic course. My objective was to build an e-commerce website for a fast growing community of anime lovers.  
<https://github.com/fifaboy/otaku-store>
- 2017 **Artificial Intelligence**, *Belief Propagation Simulator*, Platform: C++, This project was a simulation of the **belief propagation**, an established technique in artificial intelligence..  
<https://github.com/fifaboy/belief-propagation>

- 2017 **Machine Learning**, *A machine learning library for C++*, Platform: C++, In this project (incomplete), I am writing a machine learning library containing some popular algorithms in machine learning and data mining..  
<https://github.com/fifaboy/cppmllib>
- 2016 **Git Info Retrieval**, Platform: Python, Framework: Django, Rest API, I have applied Django and REST api to retrieve public information from Github api for a github user..  
<https://github.com/fifaboy/git-public-info>
- 2015 **Java, Online Library**, Platform: Java, Framework: JSP.  
 An academic project for building an online library with software design patterns

## Achievements

- 2013 **Inter-University Programming Contest**, North South University, Bangladesh, Rank 9.
- 2012 **Inter-University Programming Contest**, IUT, Bangladesh, Rank 13.
- 2013 **ICPC**, Dhaka Regional, Bangladesh, Rank 17.
- 2012 **ICPC**, Dhaka Regional, Bangladesh, Rank 18.
- 2010 **Medal in math olympiad**, Bangladesh Mathematical Olympiad, National, Regional.
- 2009 **Medal in math olympiad**, Bangladesh Mathematical Olympiad, Regional.
- 2011 – 2015 **Trainer at math camps**, Bangladesh Mathematical Olympiad, National, Extension and IMO math camps.

## Publications

- 2016 **Topics in Number Theory: An Olympiad Oriented Approach**, Masum Billal, Amir Hossein, Currently under review by Springer.
- 2015 **Similarity Aggregation for Collaborative Filtering**, AIST Conference, Sheikh Muhammad Sarwar, Masum Billal, Mahmudul Hasan, Dmitry I. Ignatov.  
[http://link.springer.com/chapter/10.1007/978-3-319-26123-2\\_23](http://link.springer.com/chapter/10.1007/978-3-319-26123-2_23)
- 2014 **A Nice Theorem in Multiplicative Functions**, Eureka, The Cambridge University Mathematical Society, Issue 63, Masum Billal.
- 2012 **Exponent GCD Lemma**, Mathematical Reflections, Issue 6, Masum Billal.
- 2015 **Combinatorial Geometry In Olympiad**, Accepted for Mathematical Reflections in 2015, Masum Billal, Nur Muhammad Shafiullah.
- 2016 **A Nice Lemma In Congruence: Thue's Lemma**, Under review by Crux Mathematicorum, Canadian Mathematical Society, Masum Billal.

## Skills

Programming C, C++  
 languages Python, Java, PHP

Level: Programming contests  
 Level: Academic project.

Markup/Script HTML, CSS, Javascript, MySQL,  
Javascript, Jinja2  
Others  $\text{\LaTeX}$ , Git, Bootstrap etc

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## Interests and Hobbies

Research Optimizing algorithms or finding new ones. Studying on topics I am interested in for interesting results. Mathematics, Algorithms, Cryptography, Machine Learning etc.  
Programming Setting problems. Problemsetter at Hackerrank.  
Mathematics Finding new results and creating new problems.  
Publication Publishing articles or papers on journals.

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## Others

- LinkedIn: <https://www.linkedin.com/in/billalmasum93>
- Blog: <https://karushib.wordpress.com/>

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## References

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