

**B. K. BIRLA COLLEGE OF ARTS, SCIENCE AND COMMERCE (AUTONOMOUS),
KALYAN**

CERTIFICATE COURSE



Textbook Companion (TBC)

The TBC project aims to port solved examples from standard engineering and science textbooks using R programming language.

Some of the completed TBCs in R

- A First Course in Probability by Sheldon Ross, Pearson, 2008
- Applied Statistics and Probability for Engineers by Douglas C. Montgomery and George C. Runger, John Wiley & Sons, 2014
- Biostatistics: Basic Concepts and Methodology for the Health Sciences by Daniel W. Wayne, Chad L. Cross, John Wiley & Sons, 2014
- Data Mining: Concepts and Techniques by Jiawei Han, Micheline Kamber, and Jian Pei, Morgan Kaufmann, 2011
- Fundamentals of Matrix Algebra, Third Edition by Gregory Hartman, CreateSpace Independent Publishing Platform, 2011
- Numerical Methods in Finance and Economics: A MATLAB-Based Introduction by Paolo Brandimarte, John Wiley & Sons, Inc., Hoboken, 2006
- Statistics for Management and Economics by Gerald Keller, Cengage Learning, 2012
- Statistics for Psychology by Arthur Aron, Elliot J. Coups, and Elaine N. Aron, Pearson. 2013

Lab Migration

We help colleges to shift labs based on proprietary tools to FLOSS.

The Lab Migration team helps in:

- Coordinating lab migration to FLOSS only labs for "R"
- Providing solutions to the lab's problem statements
- Supporting workshops for faculty, students & staff

Workshop

The FOSSEE Team conducts workshops on R and other FLOSS using spoken tutorials and gives certificates to those who pass an online test.

For more details please write to:

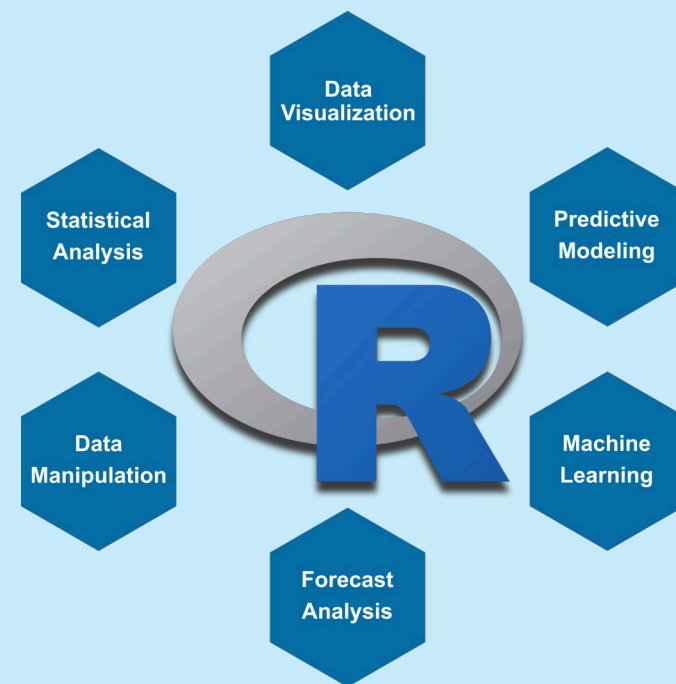
contact-r@fossee.in



<https://fossee.in>

The FOSSEE project is funded by the National Mission on Education through ICT, MHRD, Govt. of India.

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r.fossee.in



IIT BOMBAY

Introduction

R is a language and environment for statistical computing & graphics.

R is available as Free Software under the terms of the Free Software Foundation's GNU (General Public License) in source code form.

Download & Installation

Download R

<https://www.r-project.org/>

Download RStudio

<https://www.rstudio.com/>

Features

A) R is an integrated suite of software facilities for data manipulation, calculation and graphical display. It includes

- a well-developed, simple yet effective programming language which includes conditionals, loops, user-defined recursive functions and input and output facilities
- an effective data handling and storage facility
- a suite of operators for calculations on arrays, matrices in particular
- a large, coherent, integrated collection of intermediate tools for data analysis
- graphical facilities for data analysis and display either on-screen or on hardcopy

B) R has its own LaTeX-like documentation format, which is used to supply comprehensive documentation, both on-line in various formats and in hardcopy.

Who can use R language:

- Educational Institutions like universities, colleges and schools
- Statisticians and data miners for developing statistical software and data analysis, polls, data mining surveys
- Data Scientist, Market Analyst, Social Scientist

R Series on Spoken Tutorial

Basic Tutorials:

1. Introduction to basics of R
2. Introduction to data frames in R
3. Introduction to RStudio
4. Introduction to R script
5. Working Directories in RStudio
6. Indexing and Slicing Data Frames
7. Creating Matrices using Data Frames
8. Operations on Matrices and Data Frames
9. Merging and Importing Data
10. Data Types and Factors
11. Lists and its Operations

12. Plotting Histograms and Pie Chart
13. Plotting Bar Charts and Scatter Plot
14. Introduction to ggplot2
15. Aesthetic Mapping in ggplot2
16. Data Manipulation using dplyr Package
17. More functions in the dplyr Package
18. Pipe Operator
19. Conditional Statements
20. Functions in R

Target Audience

- Any Teacher/Trainer
- Students

About FOSSEE

The FOSSEE (Free/Libre and Open Source Software for Education) project team works on 'Adaptation and development of Open Source simulation packages equivalent to proprietary software', and is based at Indian Institute of Technology Bombay. FOSSEE is promoting open source software across India through various projects and activities like Textbook Companions, Lab Migration, Workshops, FOSSEE Forum, Conferences, FOSSEE Fellowship etc. for students, faculty and other FLOSS evangelists.



B.K Birla College of Arts, Science & Commerce (Autonomous), Kalyan

Certificate Course in R Programming
Spoken Tutorial at IIT Bombay

List of Students Enrolled

Sr.no	Name
1	TEJAS CHAUDHARI
2	PRANSHI SHARMA
3	MIMANSA SHARMA
4	SMRUTI DEWALKAR
5	MANSI BHANDARI
6	NIKITA SARNAIK
7	VAIDEHI PALKAR
8	DEEPIKA TANTI
9	RADHIKA ZAMBRE
10	ISHA GOSAVI
11	RASIKA BHOGWALKAR
12	SOHAM ABHAY GHEVARIA
13	SHRUSHTI GURUWARA
14	CHINMAY INGALE
15	SUDIP KALYANKAR
16	CHINMAYEE WAGH
17	RICHA SHUKLA
18	HARSHPRABHA CHAVAN
19	ARCHIT KUSHWAHA
20	HARSHADA JADHAV
21	SIDDHARTH SHETTY
22	MAHIMA DHOKARE
23	ARSHAAN HALDAR



Spoken Tutorial
Project at
IIT Bombay

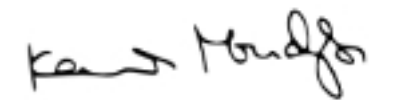
Certificate for Completion of R Training

This is to certify that **TEJAS CHAUDHARI** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 42.50%

February 25th 2022


Prof. Kannan M Moudgalya
IIT Bombay

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Spoken Tutorial
Project at
IIT Bombay

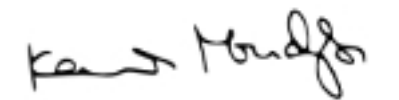
Certificate for Completion of R Training

This is to certify that **PRANSHI SHARMA** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 40.00%

February 25th 2022


Prof. Kannan M Moudgalya
IIT Bombay

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Spoken Tutorial
Project at
IIT Bombay

Certificate for Completion of R Training

This is to certify that **MIMANSA SHARMA** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 45.00%

February 25th 2022

Prof. Kannan M Moudgalya
IIT Bombay

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Spoken Tutorial
Project at
IIT Bombay

Certificate for Completion of R Training

This is to certify that **SMRUTI DEWALKAR** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 42.50%

February 25th 2022

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IIT Bombay

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Spoken Tutorial
Project at
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Certificate for Completion of R Training

This is to certify that **MANSI BHANDARI** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 42.50%

February 25th 2022

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IIT Bombay

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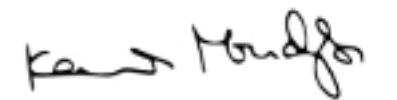
Certificate for Completion of R Training

This is to certify that **NIKITA SARNAIK** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 55.00%

February 25th 2022


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IIT Bombay

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Project at
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Certificate for Completion of R Training

This is to certify that **VAIDEHI PALKAR** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 45.00%

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IIT Bombay

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Certificate for Completion of R Training

This is to certify that **DEEPIKA TANTI** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 55.00%

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Certificate for Completion of R Training

This is to certify that **RADHIKA ZAMBRE** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 42.50%

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Certificate for Completion of R Training

This is to certify that **ISHA GOSAVI** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

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Credits: 2 Score: 45.00%

February 25th 2022

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IIT Bombay

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Certificate for Completion of R Training

This is to certify that **RASIKA BHOGWALKAR** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 40.00%

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IIT Bombay

Certificate for Completion of R Training

This is to certify that **SOHAM ABHAY GHEVARIA** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

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Credits: 2 Score: 42.50%

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Certificate for Completion of R Training

This is to certify that **SHRUSHTI GURUWARA** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

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Credits: 2 Score: 40.00%

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Certificate for Completion of R Training

This is to certify that **CHINMAY INGALE** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 40.00%

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Certificate for Completion of R Training

This is to certify that **SUDIP KALYANKAR** has successfully completed R test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 50.00%

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IIT Bombay

Certificate for Completion of R Training

This is to certify that **CHINMAYEE WAGH** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

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Credits: 2 Score: 45.00%

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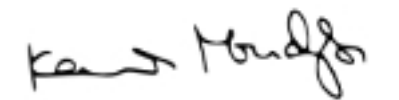
Certificate for Completion of R Training

This is to certify that **RICHA SHUKLA** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

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Certificate for Completion of R Training

This is to certify that **HARSHPRABHA CHAVAN** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 52.50%

February 25th 2022

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Project at
IIT Bombay

Certificate for Completion of R Training

This is to certify that **ARCHIT KUSHWAHA** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 45.00%

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Certificate for Completion of R Training

This is to certify that **HARSHADA JADHAV** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

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Credits: 2 Score: 45.00%

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IIT Bombay

Certificate for Completion of R Training

This is to certify that **SIDDHARTH SHETTY** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 67.50%

February 25th 2022

Prof. Kannan M Moudgalya
IIT Bombay

Credits for the Spoken Tutorial courses are based on our estimates of the work required to complete them. Recipient institutions are required to apply due diligence and get them ratified/modified by their own duly formed academic/assessment body. Spoken Tutorial is a project at IIT Bombay, started with funding from the National Mission on Education through ICT, Ministry of Education (previously MHRD), Govt. of India.



Spoken Tutorial
Project at
IIT Bombay

Certificate for Completion of R Training

This is to certify that **MAHIMA DHOKARE** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 40.00%

February 25th 2022

Prof. Kannan M Moudgalya
IIT Bombay

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Spoken Tutorial
Project at
IIT Bombay

Certificate for Completion of R Training

This is to certify that **ARSHAAN HALDAR** has successfully completed **R** test organized at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** by **Shaima Thange** with course material provided by the Spoken Tutorial Project, IIT Bombay. Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training.

Shipra Rawat at **B. K. Birla College of Arts, Science & Commerce (Autonomous), Kalyan** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 40.00%

February 25th 2022

Prof. Kannan M Moudgalya
IIT Bombay

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