

The Spoken Tutorial Project

- Self-explanatory: uses simple language
- Audio-video: uses multisensory approach
- Small duration: has better retention
- Learner-centered: learn at your own pace
- Learning by doing: learn and practise simultaneously
- Empowerment: learn a new **FLOSS** (**F**ree/**L**ibre and **O**pen **S**ource **S**oftware)

Target Group

- Students- High School and College
- Working professional- Software users, developers and trainers
- Research scholars
- Community at large

Workshops

The Spoken Tutorial Project Team conducts workshops on C and C++ and other FLOSS using spoken tutorials and gives certificates to those who pass an online test.

For more details, please visit
<https://spoken-tutorial.org>

Forum

We have developed a beginner friendly Forum to answer specific questions pertaining to any part of a particular tutorial.

For more details, please visit
<https://forums.spoken-tutorial.org>.

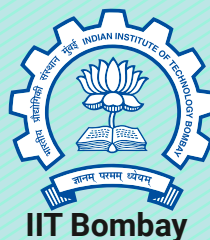
The Spoken Tutorial Project
is funded by the
National Mission on Education through
Information and Communication Technology,
Ministry of Human Resource Development,
Government of India.

Contact us

Email: contact@spoken-tutorial.org
Website: <https://spoken-tutorial.org>

Forum help
available
to all learners

Content available
in
22 Indian languages



Spoken Tutorial by IIT Bombay is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

All trademarks within this document belong to their legitimate owners.



Spoken Tutorial

<https://spoken-tutorial.org>



Scan the QR code to
visit Spoken Tutorial website



National Mission on Education through
Information and Communication Technology
(NMEICT)

www.sakshat.ac.in

Funded by MHRD, Government of India.

About C

C is a general-purpose programming language, initially developed by Dennis Ritchie between 1969 and 1973 at Bell Labs. Its design provides constructs that map efficiently to typical machine instructions. C is one of the most widely used programming language and there are very few computer architectures for which a C compiler does not exist.

Features

- C has facilities for structured programming and allows lexical variable scope and recursion.
- All executable code is contained within subroutines, called "functions."
- C program source text is free-format, using the semicolon as a statement terminator and curly braces for grouping blocks of statements.
- Typing is static, but weakly enforced: all data has a type, but implicit conversions can be performed; for instance, characters can be used as integers.
- Complex functionality such as I/O, string manipulation, and mathematical functions are easy to implement with library routines.

About C++

- C++ is a statically typed, free-form, compiled, general-purpose programming language. It was developed by Bjarne Stroustrup starting in 1979, at Bell Labs.
- It adds object-oriented features such as classes, and other enhancements to the C programming language.

- The language began as enhancements to C, first adding classes, then virtual functions, operator overloading, multiple inheritances, templates, and exception handling among other features.
- C++ is also one of the most popular programming languages and can be implemented on most hardware and OS platforms.
- As an efficient compiler to native code, its application domains include:
 - Systems software
 - Application software
 - Device drivers
 - Embedded software
 - High-performance server and client applications
 - Entertainment software like video games



Features

- **Classes:** By using classes, we can create user-defined data types. A class is the collection of a set of data and code. An object is the instance of a class.
- **Inheritance:** Allows one data type to acquire properties of other data types. This provides the idea of reusability, that means we can add new features to an existing class without

modifying it.

- **Data Abstraction and Encapsulation:** Encapsulation means hiding data from the data structures. Here, the data is accessible to only the functions that are allowed to access it. Abstraction means representing essential features without including background details.
- **Polymorphism:** means one interface can be used for multiple implementations, so that object can behave differently for each implementation.
- **Dynamic Binding:** At runtime, the code matching the object under the current reference will be called.

C and C++ Advantages

- **Powerful and flexible:** C/C++ are used for developing operating systems, compilers, parsers, interpreters, word processors, search engines and graphic programs.
- **Support:** C requires less runtime support
- **Portable programming language:** A variety of C/C++ programs written for one computer system can be compiled and run on another system, with little or no change.
- **Modular:** Written in routines called functions and classes (C++), programs can be used in other applications or programs.
- **Preferred by professional programmers:** A variety of C/C++ resources and helpful supports are widely available.
- **Standardised:** Many standards have been documented, maintained and updated for C and C++ as standard references.

Participants List Dashboard

Institution Name

Thiagarajar College of Engineering, Tamil Nadu

Foss

Cpp

Date

March 26, 2019

Participants Count

100

Organiser

shalinie

Dept.

Computer Science

Batch Year

2017

[Download all certificates](#)

#	First Name	Last Name	Email Id	Score
1	GOUSALYA	S	sumathicse661994@gmail.com	60.0% - Certificate
2	PRASANNA	S S	prasanna@student.tce.edu	90.0% - Certificate
3	GNANA ESWAR	M	eshustark@gmail.com	85.0% - Certificate
4	ARUN KUMAR	L	arunkumar2932000@gmail.com	87.5% - Certificate
5	SURYAKIRAN	S	suryakiran.suresh@yahoo.com	90.0% - Certificate
6	ARUN	K S	arunkarthik524@gmail.com	65.0% - Certificate
7	KARTHIKEYAN	S	karthikeyankarthiss7@gmail.com	80.0% - Certificate
8	MAHESHAVEL	L	maheshavel@gmail.com	87.5% - Certificate
9	KARTHIKA SHANTHINI	M	karthikashanthini@gmail.com	70.0% - Certificate
10	POONKUZHALI	B	poonks1999@gmail.com	70.0% - Certificate
11	KISHORE	R	kishoreramesh282@gmail.com	72.5% - Certificate
12	PAVITHRA	B	pavithrabala88@gmail.com	72.5% - Certificate
13	JANANI NARAYANI	J	jananijj2811@gmail.com	75.0% - Certificate
14	RAMUPRIYA	R	ramupriya069@gmail.com	62.5% - Certificate
15	NIVETHA	S	nivethaselvakumar1999@gmail.com	52.5% - Certificate

16	LAKSHMIPRIYA	B	laxmipriyaa2k@gmail.com	67.5% - Certificate
17	YUVARANI	V	yuvaranivaradhan4444@gmail.com	55.0% - Certificate
18	INDHU PRIYA	R	ramindhu19@gmail.com	87.5% - Certificate
19	SELVA VAISHANAVEE	C S	yogeshvaishu18@gmail.com	70.0% - Certificate
20	SANTHOSHI	K S	santhoshisrinivasan2000@gmail.com	72.5% - Certificate
21	DEIVANAI	S	deivanai1599@gmail.com	77.5% - Certificate
22	GAYATHRI SOWMYA	G	gayathrigovindh@gmail.com	90.0% - Certificate
23	ANTO ASHWINIE	A	antoashwinie@gmail.com	60.0% - Certificate
24	GEM SHANE NISHA	L	gemshane1999@gmail.com	82.5% - Certificate
25	S.SALIHA	SAMNA	salihasmna14@gmail.com	70.0% - Certificate
26	POOJA	M	poojaabimaran@gmail.com	70.0% - Certificate
27	HARINI	V	harinivijayakumara@gmail.com	62.5% - Certificate
28	AMEERA	U A	uaameera@gmail.com	55.0% - Certificate
29	SUPRIYA	M	msupriya101999@gmail.com	80.0% - Certificate
30	ILAYABHARATHY	J	ilayachandranmdu2000@gmail.com	62.5% - Certificate
31	MEENAKSHI	RM	meenu257@gmail.com	82.5% - Certificate
32	MADHUMITHA	V	madhuvijivenkat@gmail.com	62.5% - Certificate
33	NAGALAKSHMI	V	vnagalakshmi162@gmail.com	62.5% - Certificate
34	SHREE DHANYA	T	dhanyathailappan@gmail.com	52.5% - Certificate
35	ROSHINI	B	roshinibaskar7@gmail.com	67.5% - Certificate
36	ARASI SHANU	P. L	arasishanu11@gmail.com	75.0% - Certificate
37	SNOWPHIA	S	snowphia3@gmail.com	57.5% - Certificate
38	ABARNA	P	abarna662000@gmail.com	82.5% - Certificate
39	DIVYA	D	divya2322000@gmail.com	62.5% - Certificate

40	BHAVITHA	S	bhavi06.1999@gmail.com	72.5% - Certificate
41	VIJAYALAKSHMI	M	vijimanickam28@gmail.com	62.5% - Certificate
42	RETHINA DURAI	S J	ret.durai@gmail.com	72.5% - Certificate
43	ADITYA	S	aditya3330@gmail.com	65.0% - Certificate
44	HARIHARAN	N	hariharannagu12@gmail.com	87.5% - Certificate
45	KRISHNA KANTH	A	krishnakanthkrrish1@gmail.com	77.5% - Certificate
46	gokula krishnan	s	krishnankrish684@gmail.com	62.5% - Certificate
47	RAHUL	R	rahulraja02071999@gmail.com	67.5% - Certificate
48	MANOJ	N	manojnallusamy1999@gmail.com	90.0% - Certificate
49	ARAVINDHAN	B	szaravindhan@gmail.com	80.0% - Certificate
50	RAMANUJA BABU	R D	babuds799@gmail.com	55.0% - Certificate
51	ARUN KRISHNA	K V	arunkrishnakv@gmail.com	80.0% - Certificate
52	HALASHYA SUNDARAM	S	halashya@gmail.com	65.0% - Certificate
53	SAI ARAVIND	M	saiaravind479@gmail.com	75.0% - Certificate
54	HARIPRIYA	M	haripriya5600@gmail.com	87.5% - Certificate
55	AMUTHAN	C P	amuthan.cp12@gmail.com	80.0% - Certificate
56	PRASEETHA	R I	praseethaprachu@gmail.com	75.0% - Certificate
57	KAVIYA	S	kaviyasuresh71@gmail.com	85.0% - Certificate
58	LAVINA SHREE	M	childprodigylavi@gmail.com	82.5% - Certificate
59	RAJALAKSHMI	K	13krajiviswanathan99@gmail.com	57.5% - Certificate
60	ALCINA SHARON	L	alcinasharon@gmail.com	72.5% - Certificate
61	MOHAMED YACOOB	K	mdyacoob99@gmail.com	82.5% - Certificate
62	MAHIMA	S	mahibababe@gmail.com	70.0% - Certificate
63	SUDHARSAN	K	sudharsancse2017@gmail.com	72.5% - Certificate

64	HARISH KUMAR	M	dancingharish@gmail.com	52.5% - Certificate
65	PRAVIN	A	pravinanbu44@gmail.com	62.5% - Certificate
66	KEERTHANA	M	mkeerthanagowri@gmail.com	70.0% - Certificate
67	ISWARYA	E	iswaryaen@gmail.com	85.0% - Certificate
68	MOULIKA SWASTI	GNANASUNDARAM	moulikaswasti@gmail.com	70.0% - Certificate
69	S	SWETHA THASHINI	swethasundar1999@gmail.com	45.0% - Certificate
70	RAVINDHARAN	N	ravi9952488128@gmail.com	60.0% - Certificate
71	DHIVYAPRIYA	R	dhivyapriya02012000@gmail.com	55.0% - Certificate
72	AMRITHAA	T J	amrithaa101199@gmail.com	80.0% - Certificate
73	ESHANI	NANDY	eshaninandy@gmail.com	87.5% - Certificate
74	JEYSIVA	A P	jeysiva06@gmail.com	72.5% - Certificate
75	VARSHA	SRINIVASAN	varshu023@gmail.com	80.0% - Certificate
76	NAHAKISOR	NA	nahakisor@gmail.com	70.0% - Certificate
77	YOGA MAHALAKSHMI	M	yogatcece17@gmail.com	80.0% - Certificate
78	ABDUL RAHUMAN DEEN	M	deenabdulrahuman02@gmail.com	67.5% - Certificate
79	AJAY KRISHNAN	K.R	ajaykrishnanravi@gmail.com	77.5% - Certificate
80	AJITH KUMAR	M	ajithkumar.m1998@gmail.com	60.0% - Certificate
81	CHIRANJEEVI	S	chiranjeevitnptc@gmail.com	30.0 (Fail)
82	GEORGE PHILIP	F	georgezlatan09@gmail.com	77.5% - Certificate
83	GOKUL	S	gocool19101999@gmail.com	52.5% - Certificate
84	KESAVAN	P	kesavan1543214@gmail.com	52.5% - Certificate
85	KISHORERAJ	M	kishoreraaj2552@gmail.com	65.0% - Certificate
86	LAVANYA	S	lavkowsal@gmail.com	55.0% - Certificate
87	MEENAKSHI AISWARYA	N	meenakshiaiswarya@student.tce.edu	60.0% - Certificate
88	MOHAMED RIYAZATH	R	mdriyazath16@gmail.com	65.0% - Certificate

89	NAGA ASHWIN	C R	ashwinnagha@gmail.com	32.5 (Fail)
90	PARTHIPAN	P	parthipan9994@gmail.com	80.0% - Certificate
91	PERIYASAMY	M	mperiyasamece@gmail.com	45.0% - Certificate
92	PRADEEPA	R	pradeeshanmii17@gmail.com	85.0% - Certificate
93	RAJA PANDI	G.R	activeraju2108@gmail.com	25.0 (Fail)
94	MALUSHA	KALIMUTHU	malusha@student.tce.edu	70.0% - Certificate
95	C	BALAABIRAMI	abiagb28@gmail.com	45.0% - Certificate
96	SIVA	MALA	sivamala@student.tce.edu	55.0% - Certificate
97	N	MEERA	meera@student.tce.edu	57.5% - Certificate
98	S.DHARSHIKA	S.DHARSHIKA	dharshika@student.tce.edu	37.5 (Fail)
99	SHANTHOSH	KUMAR	shanthoshkumar@student.tce.edu	67.5% - Certificate
100	K.B	SARANYA	saranyak@student.tce.edu	60.0% - Certificate
101	DURGA	DEVI	durgadevip@student.tce.edu	47.5% - Certificate

- [FOSSEE Project](#)
- [Scilab](#)
- [eSim \(Oscad\)](#)
- [Python](#)
- [OpenFoam \(CFD\)](#)
- [Aakash Labs](#)
- [Co-learn](#)
- [Education Mission](#)
- [Software Training](#)
- [Contacts for Training](#)
- [Training Dashboard](#)
- [Creation Dashboard](#)
- [About Us](#)
- [News](#)
-

149,091,991 **149,091,990** page loads

[Click here to view stats](#)

Participants List Dashboard

Institution Name

Thiagarajar College of Engineering, Tamil Nadu

Foss

C++

Date

March 26, 2019

Participants Count

43

Organiser

shalinie

Dept.

Computer Science Engineering (CSE)

Batch Year

2017

[Download all certificates](#)

#	First Name	Last Name	Email Id	Score
1	SHREEVARTHINI	R V	rvshreevarthini@gmail.com	62.5% - Certificate
2	SURYAKIRAN	S	suryakiran.suresh@yahoo.com	90.0% - Certificate
3	SURESH	R	sureshravichandran281@gmail.com	95.0% - Certificate
4	VILVAVELRAJ	M	vilvacse17@gmail.com	32.5 (Fail)
5	SHAKIL AHAMED	S	shakil15899@gmail.com	77.5% - Certificate
6	NAVEEN	RAJHA	naveenrajha1131@gmail.com	87.5% - Certificate
7	ANINTHITHA	G	nivatha1120@gmail.com	40.0% - Certificate
8	SOORYA	S	sooryavasan@gmail.com	77.5% - Certificate
9	YAZHINI	VK	yazhini.venk@gmail.com	45.0% - Certificate
10	PAVITHRA	B	pavithrabala88@gmail.com	72.5% - Certificate
11	SINDHUJA	R	sindhusind17@gmail.com	77.5% - Certificate
12	SUMAYA	ABDUL SATHAR	sumayaasathar@gmail.com	62.5% - Certificate
13	YASHIKA PRIYADHARSHINI	T	yashika.dharshini@gmail.com	87.5% - Certificate
14	YUVARANI	V	yuvaranivaradhan4444@gmail.com	55.0% - Certificate
15	SELVA VAISHANAVEE	C S	yogeshvaishu18@gmail.com	70.0% - Certificate

16 SANTHOSHI	K S	santhoshisrinivasan2000@gmail.com	72.5% - Certificate
17 SUPRIYA	M	msupriya101999@gmail.com	80.0% - Certificate
18 SHREE DHANYA	T	dhanyathailappan@gmail.com	52.5% - Certificate
19 SUVEDHA	B	suvedha17021999@gmail.com	57.5% - Certificate
20 SNOWPHIA	S	snowphia3@gmail.com	57.5% - Certificate
21 PRADEEPA	R	pradeepar1706@gmail.com	65.0% - Certificate
22 VIJAYALAKSHMI	M	vijimanickam28@gmail.com	62.5% - Certificate
23 VIJAY SANKAR	V	vvs221199@gmail.com	67.5% - Certificate
24 SRINITHISH	G	srinithish.sn@gmail.com	72.5% - Certificate
25 SIVARAMAN	S	sivaramanshine29@gmail.com	62.5% - Certificate
26 SRIRAM	S	sriramrsk111@gmail.com	62.5% - Certificate
27 VALLIMAYIL	R	vallicharu@gmail.com	70.0% - Certificate
28 SUPRIYA	A	haripriya.1728@gmail.com	75.0% - Certificate
29 SUDHARSAN	K	sudharsancse2017@gmail.com	72.5% - Certificate
30 THINESH	R	thinesh9047@gmail.com	90.0% - Certificate
31 SOUNDARRAJAN	T	tcesoundar@gmail.com	45.0% - Certificate
32 YOGA MAHALAKSHMI	M	yogatcece17@gmail.com	80.0% - Certificate
33 SATHISH KUMAR	M	maruthusathish2000@gmail.com	10.0 (Fail)
34 SELVAMANI	K	selvamanikannan55@gmail.com	82.5% - Certificate
35 SHANMUGA PRIYA	R. S	shanmugacools189@gmail.com	72.5% - Certificate
36 Sivaprakash	M	sikash1999@gmail.com	55.0% - Certificate
37 SOWNDHAR RAJAN	E	sowndharrocky10@gmail.com	45.0% - Certificate
38 SURIYA	S	jacksuriya0@gmail.com	70.0% - Certificate
39 SWETA	L	sweta16061999@gmail.com	57.5% - Certificate
40 SWETHA	M	swetham9110@gmail.com	75.0% - Certificate

41 VISHNU	T	vishnu60778@gmail.com	40.0% - Certificate
42 ANANTHAKARTHICK	P	ananthakarthick@student.tce.edu	55.0% - Certificate
43 JEYASURYA	VG	jeyasurya@student.tce.edu	42.5% - Certificate

- [FOSSEE Project](#)
- [Scilab](#)
- [eSim \(Oscad\)](#)
- [Python](#)
- [OpenFoam \(CFD\)](#)
- [Aakash Labs](#)
- [Co-learn](#)
- [Education Mission](#)
- [Software Training](#)
- [Contacts for Training](#)
- [Training Dashboard](#)
- [Creation Dashboard](#)
- [About Us](#)
- [News](#)
-

149,093,053 **149,093,052** page loads

[Click here to view stats](#)

[Developed at IIT Bombay](#)



Spoken Tutorial by [IIT Bombay](#) is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](#), except where stated otherwise

Based on a work at <https://spoken-tutorial.org>. Permissions beyond the scope of this license may be available at <https://spoken-tutorial.org>.

Participants List Dashboard

Institution Name

Thiagarajar College of Engineering, Tamil Nadu

Foss

Cpp

Date

Aug. 30, 2019

Participants Count

35

Organiser

shalinie

Dept.

Computer Science Engineering (CSE)

Batch Year

2017

[Download all certificates](#)

#	First Name	Last Name	Email Id	Score
1	YOGA MAHALAKSHMI	M	yogatcece17@gmail.com	80.0% - Certificate
2	SWATHI	G. V	ammu070698@gmail.com	42.5% - Certificate
3	PRATHAP	RAJ	prathapkutty0@gmail.com	30.0 (Fail)
4	JANANI	NATARAJAN	jananisrinatarajan1999@gmail.com	27.5 (Fail)
5	KALADHARAN	N	nkeeeau@gmail.com	37.5 (Fail)
6	YOKESH	V	yokesh7vi@gmail.com	40.0% - Certificate
7	JOTHEESHWARAN	S	jotteeswaran118@gmail.com	47.5% - Certificate
8	SUNDAR	SHANTHANANM	ssundar4899@gmail.com	35.0 (Fail)
9	RAHMATH	RINA	rahmathrina007@gmail.com	37.5 (Fail)
10	SUMAYYA	KADER NISHA	sumayyahmed55@gmail.com	42.5% - Certificate
11	AFRIN	AJEEMA	kaathu0912@gmail.com	30.0 (Fail)
12	K.	KALEESWARAN	ajithkali06@gmail.com	17.5 (Fail)
13	AFRIN	AASHIMA	aashimaafrin13@gmail.com	27.5 (Fail)
14	m.	karthik	ajithkarthik0511@gmail.com	17.5 (Fail)
15	JEYA	PREETHA	preethasaravanan2402@gmail.com	40.0% - Certificate
16	RAHUMATH RAHIMA BEEVI	J	emailtorahimaa@gmail.com	37.5 (Fail)
17	RISWANA	PARVEEN	ubazsir@gmail.com	22.5 (Fail)
18	SHAJITHA	REHANA	shajitharehana23@gmail.com	30.0 (Fail)
19	SATHIYAPRIYA	SATHIYAPRIYA	arunaguna1098@gmail.com	30.0 (Fail)
20	M.DHABEEAA	PARVEEN	mdhabee2830@gmail.com	27.5 (Fail)
21	SOUMIYA	SOUMIYA	soumiyam08@gmail.com	30.0 (Fail)



Spoken Tutorial
Project at
IIT Bombay

Certificate for the Completion of Cpp Training

This is to certify that **NAVEEN RAJHA** has successfully completed **Cpp** test organized at **Thiagarajar College of Engineering** by **MERCYSHALINIE S** 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.

K SUNDARAKANTHAM from **Thiagarajar College of Engineering** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 87.50%

March 26th 2019

A handwritten signature in black ink, appearing to read 'Kannan Moudgalya'.

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

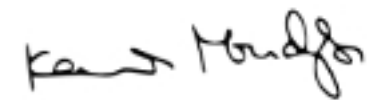
Certificate for the Completion of Cpp Training

This is to certify that **SOORYA S** has successfully completed **Cpp** test organized at **Thiagarajar College of Engineering** by **MERCYSHALINIE S** 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.

K SUNDARAKANTHAM from **Thiagarajar College of Engineering** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 77.50%

March 26th 2019


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

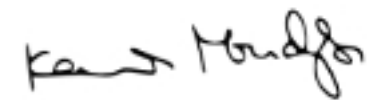
Certificate for the Completion of Cpp Training

This is to certify that **SURESH R** has successfully completed **Cpp** test organized at **Thiagarajar College of Engineering** by **MERCYSHALINIE S** 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.

K SUNDARAKANTHAM from **Thiagarajar College of Engineering** invigilated this examination. This training is offered by the Spoken Tutorial Project, IIT Bombay.

Credits: 2 Score: 95.00%

March 26th 2019


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.