

# Education, Education, Education

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## “Ask me my three main priorities for government, and I tell you: education, education, education.”

That was Tony Blair, then leader of the opposition party in Britain, at the 1996 Labour Party conference in Blackpool. Within less than a year, he was elected to power, with a landslide majority, and became the youngest British Prime Minister in over one hundred and fifty years.

Ten years later, in the month that Blair resigned his position as Prime Minister and leader of the British Labour Party, the BBC examined his legacy to the education system [1].

Not to be outdone, we examine the current state of Symbian OS developer education available, for developers of the future, in universities and schools, and for today’s professional developers.

## 1 Symbian Academy for Universities

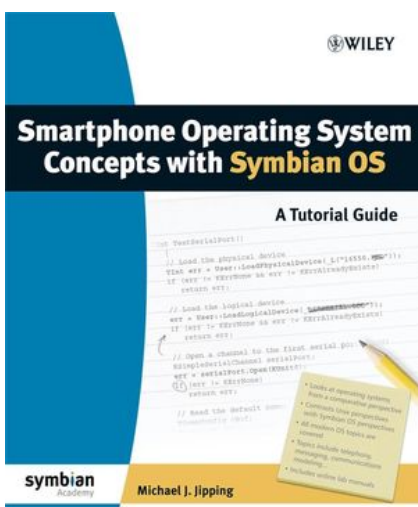
Symbian Academy is an initiative driven by Symbian to provide free support to universities and non-commercial institutions that wish to teach students about development on Symbian OS. The scheme was announced in June 2006 and there are currently over 30 universities affiliated with Symbian Academy, including London Metropolitan University, Aalborg University, Alcorn State University and Beijing University of Posts and Telecommunications. There are approximately 1000 students enrolled in courses that include components covering Symbian OS.



Symbian Academy has helped university teams by creating teaching materials that can be integrated into an existing computer science course. Universities affiliated with the Academy receive free presentation resources (slides, lecture notes and worked examples for use by students in lab exercises), training and technical support.

More information about the resources provided, and additional benefits, can be found in reference [2] or by contacting [academy@symbian.com](mailto:academy@symbian.com).

The provided course teaches the knowledge and skills required for C++ development on Symbian OS, and is called the “Fundamentals of Symbian OS”. Its curriculum is defined by the Accredited Symbian Developer (ASD) Scheme, details of which are described later. The curriculum covers the topics that Symbian believes necessary for a comprehensive understanding of Symbian C++ software development. There are more details in reference [3].



After taking the Fundamentals of Symbian OS course, and completing the lab exercises, students may take the Accredited Symbian Developer exam to verify that they have attained the level of skills and understanding required to be a proficient Symbian OS developer.

### Textbooks

To assist students during their university courses, Symbian Academy is also committed to work with Symbian Press to publish a series of textbooks for students (these can also be useful to other Symbian Developers working on the platform commercially or as a hobby). The first book in the series was the Accredited Symbian Developer Primer, published in October 2006, which is discussed in more detail in the later section on the Accredited Symbian Developer Scheme.

The newest Symbian Academy book was published in May 2007 and is called “Smartphone Operating System Concepts with Symbian OS”. It introduces operating systems for students and others interested in learning more about smartphone platforms, specifically, Symbian OS. There are many textbooks that describe different aspects of operating systems, but most bypass those in mobile phones. This book discusses operating system concepts by comparing and contrasting Symbian OS, Linux and Microsoft Windows. It exercises that can be used by universities as assignments, to be worked on in a classroom laboratory.

For more information on the book, and how to acquire it, please consult the Symbian Press website, details of which can be found in reference [4].

### ***Case Study: London Metropolitan University***

In May 2007, London Metropolitan University announced a new MSc. course in Mobile Applications Development, to begin in September 2007. The course is supported by Symbian Academy and aims to provide students with relevant skills for developing cutting-edge technology for smartphones. Part of the curriculum includes the principles of designing and developing mobile applications on Symbian OS. Students completing the course are encouraged to take the Accredited Symbian Developer exam to demonstrate that they have a good understanding of C++ development on Symbian OS.

The course was created by Dr Yanguo Jing, from London Metropolitan's department of Computing, Communications Technology and Mathematics, in conjunction with Symbian Academy. "The popularity of mobile technology and Symbian smartphones have boomed in the last decade," said Dr Jing. "With the smartphone market set for continued expansion, there is a growing need for professional Symbian developers to create compelling new applications that help users enjoy the benefits of smartphones. The Mobile Applications Development for Symbian OS course is both academically advanced and industry-recognised, providing students with relevant skills for developing tomorrow's smartphone applications to help users make the most of tomorrow's technology whether it be for enterprise, multimedia, music and location-based services, to name just a few.

More information about the course at London Metropolitan University can be found in reference [5].

## **2 Professional Developer Education**

The Academy is the way in which Symbian encourages new developers to gain professional skills and accreditation. But what about existing developers who are already in the world of work, either currently writing code for Symbian smartphones, or planning to do so? Professional developers may wish to extend their general knowledge of writing C++ on Symbian OS, or to become more familiar with particular areas such as platform security, the internals of the OS or aspects of application development.

Professional training on Symbian OS is available direct from Symbian's Technical Training team or from the worldwide network of Symbian training partners, with whom Symbian works closely to maintain a high level of subject coverage, availability and quality. More information about Symbian OS developer training can be found in reference [6].

Most developers pick up knowledge and skills by experience: their own and by learning from others. The Symbian Developer Network [7] (sometimes known as the “SDN” or “DevNet”) is a community for sharing information. Developers can use the forums to discuss specific questions or bring issues to the attention of Symbian Developer Consultants.

The Symbian Developer Network also hosts a wiki for sharing information with the rest of the community. The material available on the wiki is diverse, ranging from presentations given by Symbian staff at recent developer events, a set of links to current open source projects for Symbian OS, and the most up-to-date information about P.I.P.S. [8].

**symbian**  
Developer Network

Getting started Tools & SDKs Library Academy Symbian Signed Forums **Wiki**

Wiki  
**Wiki Home**

**Welcome to the Symbian Developer Network Wiki**

Welcome to the Symbian Developer Network wiki where we invite the Symbian developer community to make a contribution to content that's relevant and of use to Symbian developers.

**Where do I start?**

In the SDN wiki, content is organized into the spaces you see below. Spaces are areas on our site into which we have grouped content items such as pages and attachments based on areas within the Symbian Developer Network. For instance, we've set up separate areas for a glossary, tech papers, Symbian Academy, developer tools, etc. and our wiki treats each space as an independently managed section. What this means is that each space functions autonomously within our site. Also, each page created can support comments at the bottom of each page so please, feel free, to provide feedback.

Our wiki is easy to use but for detailed instructions on how to use it please see the [detailed user guide](#).

If you have any thoughts or ideas then please email: [sdn@symbian.com](mailto:sdn@symbian.com).

Spaces: **My** **New (1)** All

<a href="#">Academy and press</a> (academy)			
<a href="#">Applications</a> (apps)			
<a href="#">Developer tools</a> (devtools)			
<a href="#">Events and presentations</a> (event)			
<a href="#">Example source code</a> (soode)			
<a href="#">Glossary</a> (glossary)			
<a href="#">Open source projects</a> (open)			
<a href="#">P.I.P.S.</a> (oe)			
<a href="#">Runtime environments</a> (run)			
<a href="#">Symbian Signed</a> (sign)			
<a href="#">Technical papers</a> (papers)			

**Feed Builder** - create your custom RSS feed.

### The Symbian Developer Network wiki at <http://developer.symbian.com/wiki>

As the screenshot above shows, beside the forums and wiki, the SDN website also provides access to resources for getting started on Symbian OS, including links to download SDKs and tools, example code and technical papers. "We'll be adding some new resources soon," says Rodney de Gale, Symbian Developer Network Manager. "These include instructional flash videos to illustrate the use of developer tools and services, instructional videos showing Symbian smartphones in action and interviews with key people from the Symbian OS community".

There are a number of other community websites for Symbian OS developers, including Forum Nokia, UIQ Developer, Sony Ericsson Developer World, MOTODEV and NewLC. Links to these sites can be found in reference [9]. Information and general discussion about Symbian smartphones and the Symbian ecosystem can also be found on sites such as SymbianOne and All About Symbian, links to which can be found in reference [10].

### 3 Symbian Press

Symbian Press publishes a range of free booklets, known as the “Essentials Series”. The booklets can be downloaded in PDF file format from the Symbian Press website [4], are available to pick up at any developer event that Symbian attends or can be sent out directly to those making a request to [books@symbian.com](mailto:books@symbian.com).

Current booklets in the series include:

- Getting Started (also available in Chinese)
- UIQ Essentials (also available in Chinese)
- P.I.P.S.
- Carbide.c++
- Java ME on Symbian OS
- Signing Tips
- Coding Tips (also available in Japanese, Korean and Chinese)
- Performance Tips (also available in Japanese and Chinese)
- Data Sharing Tips



“We always welcome ideas and comments,” said Satu McNabb, Assistant Editor at Symbian Press. “If a developer has an idea for a booklet, we’d be happy to discuss it and if suitable, get it published”.

Symbian Press also collaborates with the publisher John Wiley and Sons to issue a number of books about Symbian OS. The books include a series of developer titles for getting started with Symbian OS (in C++ and Java), the Symbian Academy series mentioned previously, and a range of books that cover various Symbian technologies, such as communications, platform security, the Symbian OS EKA2 kernel and an architecture sourcebook. More information about the books can be found on the Symbian Press website [4], including information about how to order the books direct from the publisher or from online retailers such as Amazon.com.

### 4 Accredited Symbian Developer

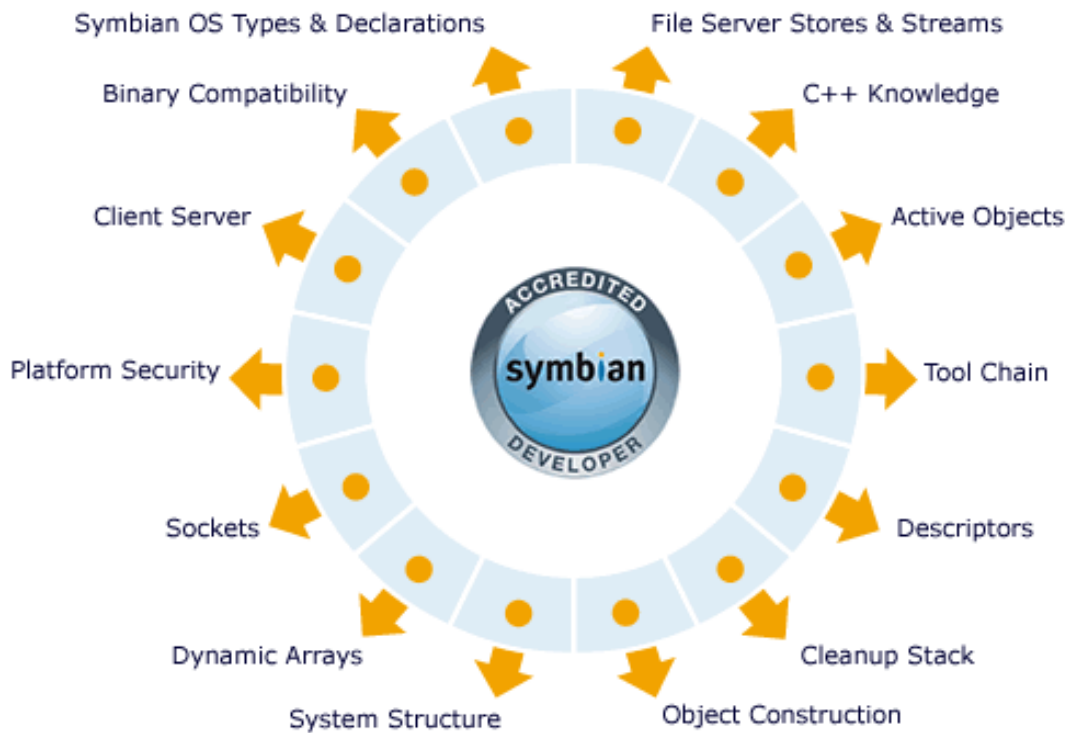


The Accredited Symbian Developer (ASD) scheme is a qualification for professional smartphone software developers. It certifies an individual's understanding of the fundamental aspects of Symbian C++ software development.

Evaluation is by a computer-assessed exam that can be taken on any computer with a web browser and Internet connection.

The questions within the ASD exam are based on a curriculum of core knowledge that Symbian annually reviews and updates. The learning objectives tested by the ASD form the basis of the “Fundamentals of Symbian OS” course provided by the Symbian Academy, mentioned earlier.

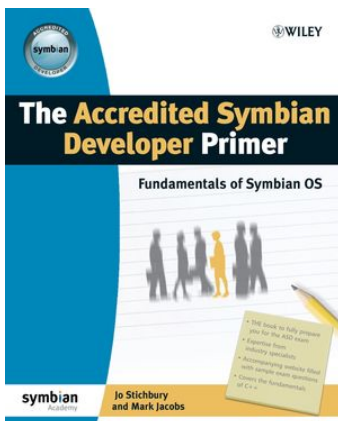
The curriculum includes both theoretical and practical topics, assessing both the understanding and application of Symbian C++.




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The ASD curriculum © 2005 - 2007 Majinate Ltd

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WILEY

A comprehensive revision guide to the ASD exam called "The Accredited Symbian Developer Primer" is available from Symbian Press [4]. It comes from the "horse's mouth"; the authors of the book were involved in the creation of the learning objectives and questions for the ASD exam.

Each chapter groups learning objectives together by curriculum topic, and breaks them into sections that provide in-depth explanations of C++ and Symbian OS. The authors also created a set of sample questions to allow the reader to practice before taking the exam. The questions are available from the ASD site on the Symbian Developer Network [11].

An independent company, Majinate Ltd [12], administers the ASD program on Symbian's behalf. When a candidate sits the exam, the questions are weighted and the test runs in an adaptive mode. This means that each person is asked questions tailored to the level of ability that they exhibit during the exam. The exam poses challenging questions to candidates, whatever their level of knowledge.

The pass mark of the ASD exam is decided by Symbian, and is calibrated against a broad sample group. Individuals that pass the examination acquire the industry-recognised title 'Accredited Symbian Developer' and are given a certificate and electronic logo for use on their website.

Qualified ASDs are also entitled to benefits such as access to the ASD portal provided by Majinate, exclusive discounts and invitations to special developer events.

Besides these tangible benefits, the ASD scheme gives professional Symbian C++ developers the opportunity to demonstrate their competence to potential employers. By extension, the qualification gives employers confidence that they are recruiting knowledgeable Symbian C++ developers.

"I whole heartedly recommend the ASD program for anyone serious about working with Symbian OS," says Sam Mason, a professional computer scientist from Sydney, Australia, and an ASD. "It has been one of the more intense learning processes of my professional life".

More information about ASD, including a webcast, can be found on the Symbian Developer Network [11]. The scheme is endorsed by both S60 and UIQ. A complementary examination, to assess understanding of S60 user interface development has also recently been introduced, and more information about this can be obtained from Forum Nokia and Majinate.

## 5 Symbian OS in Schools?

While Symbian Academy currently supplies teaching materials to universities, at present, it does not deliver similar content to schools. But should Symbian start to foster smartphone development skills in children? This was the subject of a recent panel discussion at the 2007 ACCU conference in Oxford [13]. The subject for discussion was as follows:

*"Can the advent of high level dynamic languages on mobiles, such as Python and Ruby, make programming on phones a child's play? How can the rest of us benefit and what can we do about it?"*



The discussion was chaired by David Wood, EVP Research at Symbian, and the panel included Russell Winder, previously Professor of Computing at King's College London, and members of Symbian's Developer Product Marketing team. Members of the audience ranged from recent university graduates to those with over thirty years' experience in the IT industry. The range of backgrounds made for a lively debate as we tried to pin down exactly what constituted "programming", what makes a language "good" to learn and who drives technology.

We all agreed that the young are eager to study if they are engaged by a subject; "They're learning machines," said Mary Poppendieck, relating a story about her granddaughter's curiosity about the best way to drop an egg from a height without breaking it. Russell Winder confirmed that there are certain points in child's development when the brain builds reasoning skills and strategies.

We know that even very young students can be adept at problem-solving if those problems are absorbing and pitched at an appropriate level. Children learn even when there is no external pressure or reward other than the satisfaction of "finding out". What's more, they are both problem solvers and generators because they also seek to create new challenges.

Schools should be well positioned to build on children's motivation to explore and understand. But we heard from one participant that the IT teaching in British schools does not reflect the skills required later in the workforce. This appears to be independently confirmed in a recent article by David Puttnam in the Guardian [14].

Is there a gap between what young people learn in class and their interests and enthusiasms out of school (for technology in general and mobile phones in particular)? Can this gap be closed to the advantage of the schools themselves, their pupils and future generations of technology users? And, if so, in an era of pervasive mobile computing, should programming Symbian smartphones be one of the subjects that schools embrace? These were questions that, unsurprisingly, could not be resolved in a 90 minutes panel discussion.

## 6 In Conclusion

At the beginning of this paper, we mentioned the BBC's review of Tony Blair's influence on education after ten years in government [1]. Perhaps in time we should invite a similar retrospective of Symbian's education provision for younger developers. The future is, after all, in our hands.

## 7 References

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