

# Career Profile: Software Programmer

Programmers design software programmes to be used by others. They work in information technology departments of large organisations, big software companies and small service firms. The work varies widely depending on the type of business involved. For more complex programmes, systems analysts or senior programmers usually specify the design to be followed and the programmers convert it into a logical set of instructions for the computer. Programmers use a relevant programming language, e.g. COBOL, Fortran, Java, C++ and PHP in communicating these instructions.

## Education Requirements

### National Senior Certificate (NSC)

For a career in computer programming students are advised to select Mathematics and to add to this a selection from the designated subjects. These are subjects that are particularly suitable for tertiary study.

### Bachelor Degree

**Bachelor of Science (Computer Science) – BSc (CS) (3 years)**

**Bachelor of Science (Information Technology) BSc (IT) (3 years)**

Generally the computer science degree focuses more on the theoretical base while the information technology degree focuses more on applications.

#### Offered at:

- [North-West University](http://www.puk.ac.za/fakulteite/ing/electrical/index_e.html)<sup>1</sup> (Potchefstroom Campus - Electrical, Electronic and Computer Engineering)
- [University of Johannesburg](http://www.uj.ac.za/Default.aspx?alias=www.uj.ac.za/compengineer)<sup>2</sup> (Department of Electrical and Electronic Engineering Technology)
- [University of Pretoria](http://www.cs.up.ac.za/prospective/undergrad)<sup>3</sup> (Computer Science)
- [University of the Witwatersrand](http://www.cs.wits.ac.za/)<sup>4</sup> (School of Computer Science)
- [University of Venda](http://www.univen.ac.za/math_natural_sciences/computer.html)<sup>5</sup> (Computer Science and Information Systems)
- [UNISA](http://brochure.unisa.ac.za/brochure/showprev.aspx?d=l_4_0_2&f=p_02089ISE)<sup>6</sup> (School of Computing - Software Engineering)

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<sup>1</sup> [http://www.puk.ac.za/fakulteite/ing/electrical/index\\_e.html](http://www.puk.ac.za/fakulteite/ing/electrical/index_e.html)

<sup>2</sup> <http://www.uj.ac.za/Default.aspx?alias=www.uj.ac.za/compengineer>

<sup>3</sup> <http://www.cs.up.ac.za/prospective/undergrad>

<sup>4</sup> <http://www.cs.wits.ac.za/>

<sup>5</sup> [http://www.univen.ac.za/math\\_natural\\_sciences/computer.html](http://www.univen.ac.za/math_natural_sciences/computer.html)

<sup>6</sup> [http://brochure.unisa.ac.za/brochure/showprev.aspx?d=l\\_4\\_0\\_2&f=p\\_02089ISE](http://brochure.unisa.ac.za/brochure/showprev.aspx?d=l_4_0_2&f=p_02089ISE)

### **Specializations offered:**

The universities offer several specializations including some 4 year options at Pretoria University.

#### **North-West University**

BSc (Information Technology) (in Afrikaans only)

#### **University of Johannesburg**

BSc (Information Technology)

#### **University of Pretoria**

BSc (Computer Science), BSc (Information Technology), BIT (Information Technology – 4 years), BIS (Information Science specialising in Multimedia – 4 years)

#### **University of the Witwatersrand**

BSc (Computer Science)

#### **University of Venda**

BSc (Computer Science)

#### **UNISA**

BSc with specialisation in Information Technology and Computer Science (Software engineering stream).

## **National Diploma / BTech**

Students who prefer a more practical approach can enrol for programmes to qualify in programming at BTechnology and Diploma levels. Specializations are offered in these programmes. The National Diploma is a three year course which includes guided practical experience. The diploma is a pre-requisite for admission to a Bachelor of Technology - BTech.

### **Offered at:**

- [Tshwane University of Technology](#) (Department of Computer Networks)
- [University of Johannesburg](#)<sup>8</sup> (Department of Electrical and Electronic Engineering Technology)
- [Vaal University of Technology](#)<sup>9</sup> (Applied and Computer Sciences Department)

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[http://www.tut.ac.za/Students/facultiesdepartments/informationcommunicationtech/departments/Documents/comp\\_networks.pdf](http://www.tut.ac.za/Students/facultiesdepartments/informationcommunicationtech/departments/Documents/comp_networks.pdf)

<sup>8</sup> <http://www.uj.ac.za/Default.aspx?alias=www.uj.ac.za/compengineer>

<sup>9</sup> [http://www.vut.ac.za/new/index.php?option=com\\_content&view=article&id=47&Itemid=693](http://www.vut.ac.za/new/index.php?option=com_content&view=article&id=47&Itemid=693)

## Specializations offered:

There are a number of National Diplomas and BTech degrees to consider.

### Tshwane University of Technology

**National Diploma:** IT (Software development), IT (Intelligent Industrial Systems), IT (Multimedia), IT (Web and application development), Computer studies, IT (Technical applications)

**BTech:** IT (Software development), Computer Systems, IT (Intelligent Industrial Systems), IT (Multimedia), IT (Web and application development), Computer studies, IT (Technical applications), Professional practice in IT

### University of Johannesburg

**National Diploma:** Engineering (Computer Systems)

**BTech:** Engineering (Computer Systems)

### Vaal University of Technology

**National Diploma:** Information Technology

**BTech:** Information Technology

## Admission requirements

As admission requirements vary from one institution to another, find out what the specific requirements are by checking on the website and contacting the university if you have any queries.

## Possible Employers

- Manufacturing industries
- Medium size and large businesses and organizations
- Banks
- [Eskom](http://www.eskom.co.za/)<sup>10</sup>
- [Transnet](http://www.transnet.co.za/)<sup>11</sup>
- [Sasol](http://www.sasol.co.za/)<sup>12</sup>
- [Iskor](http://www.iscor.co.za/)<sup>13</sup>
- [CSIR](http://www.csir.co.za/)<sup>14</sup>
- [SANDF](http://www.dod.mil.za/)<sup>15</sup>
- Mines
- Educational institutions
- ICT consulting firms

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<sup>10</sup> <http://www.eskom.co.za/>

<sup>11</sup> <http://www.transnet.co.za/>

<sup>12</sup> <http://www.sasol.co.za/>

<sup>13</sup> <http://www.iscor.co.za/>

<sup>14</sup> <http://www.csir.co.za/>

<sup>15</sup> <http://www.dod.mil.za/>

## Find out more

Find out more about IT, bursaries and jobs:

- Find out more about Information Communication Technology and some of the opportunities available as well as useful websites where you can improve your knowledge of programming and associated career in the industry:
- [Rigalion](#) is a SAP consulting company that runs a Graduate Recruitment Programme with programming in ABAP and Java as one of the possibilities.
- [Useful overviews on careers in computing](#)<sup>16</sup>
- [Explains what programming involves](#)<sup>17</sup>
- [Useful information about programming and web page development](#)<sup>18</sup>, a related option
- [An article that outlines what object-oriented programming is and identifies some of its benefits](#)<sup>19</sup>
- [A news item about a newly launched academy to boost ICT skills in the country](#)<sup>20</sup>. The ISETT Seta is working with the government to back this project.

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<sup>16</sup> <http://www.careeroverview.com/computer-careers.html>

<sup>17</sup> <http://www.wisegeek.com/what-does-a-computer-programmer-do.htm>

<sup>18</sup> <http://www.nwcet.org/programs/cyberCareers/students/itcareercenter/webdev>

<sup>19</sup> <http://www.alagad.com/go/blog-entry/what-does-object-oriented-programming-do-for-me>

<sup>20</sup> [http://www.engineeringnews.co.za/article.php?a\\_id=133271](http://www.engineeringnews.co.za/article.php?a_id=133271)

## Are you suited to this career?

This quick quiz can help you to identify whether you are suited for this occupation.

Quiz	Yes	No
Do you enjoy detailed work?		
Are you good at solving problems and interested in continually working out fresh solutions?		
Do you have perseverance and stick with a problem until you have solved it?		
Do you have a very systematic way of working?		
Do you have lots of patience?		
Are you able to look at things from different points of view?		
Do you enjoy finding different ways of doing things?		
Can you handle working under pressure?		
Are you able to work well with others?		
Do you find it easy to work carefully and accurately?		

If you have mainly yes answers it may be an indication that this is an occupation to consider.