CAREERS
WITH STEM™ JOB KIT

SOFTWARE DEVELOPER

Industry insights, tips and advice to help kickstart your career with computers

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QUT

Real-world IT starts here.

Kimberly Valenny's passion for equal opportunity in the tech industry began in high school, after looking around her IT class and noticing she was the only female in the room.

After school she went on to study a QUT double degree in Information Technology and Creative Industries, majoring in Computer Science and Interaction Design. It was here she had the opportunity to further advocate for female representation in IT, becoming president of the Women in Technology student club and hosting the regular 'Women in STEM Industry Night'.

Now a Graduate Front End Developer at Deloitte Digital, Kimberly credits her QUT 'STEM tribe' for arming her with the confidence and support to pave her own path in the historically male-dominated tech industry.

🔍 **QUT IT**

the university for the real world

QUT

CREATE THE TECH OF TOMORROW

Want to be at the forefront of technology and shape the future? A career as a software developer could be just the ticket! With skills in high demand, you'll be well on your way to building a bright future

PETA WYETH COMPUTER SCIENCE RESEARCHER AND DEPUTY DEAN, FACULTY OF SCIENCE, QUT

Software developers make the technology we use every day, like apps on our smartphones, programs we use on our computer and even the tech in our cars. They help make things work better and make our lives easier and more fun. Over the following pages, you'll discover what it takes to become a software developer, the opportunities available, the day-to-day tasks and meet real-life role models.

I have spent many years studying and working in the field of computer science. My main area of expertise is in human-computer interaction, which is all about making technology more user-friendly and accessible. I have also had the opportunity to work with lots of experts, including software developers, to address real-world problems.

Software solutions

More recently, my job has taken me into the world of academic administration and leadership, including my current role as Deputy Dean of the Faculty of Science at QUT. This has given me a lot of experience in working with students, educators and researchers to create exciting and inspiring educational environments.

I am passionate about encouraging the next generation of thinkers and leaders in computer science and technology. I believe computer

> **I BELIEVE COMPUTER SCIENCE IS ESSENTIAL FOR ADDRESSING SOME OF THE CRITICAL CHALLENGES WE FACE AS A SOCIETY"**

science is essential for addressing some of the critical challenges we face as a society – and software development is a key role in this field.

That's why I'm excited to share this Job Kit with you, and I hope it will inspire you to explore further the exciting world of computer science and the opportunities available to you as a software developer.

Peta Wyeth
Computer science researcher and Deputy Dean, Faculty of Science, QUT

DEPUTY DEAN, FACULTY OF SCIENCE, QUT

HEAD OF SCHOOL, SCHOOL OF COMPUTER SCIENCE, QUT

PROFESSOR, QUT

PHD (COMPUTER SCIENCE), UNIVERSITY OF QUEENSLAND

BACHELOR OF INFORMATION TECHNOLOGY, UNIVERSITY OF QUEENSLAND

QUT/SHUTTERSTOCK

Check out CareerswithSTEM.com for more insights, information, inspiration and advice about Software Developer careers!

Crack the code...

...on software developer careers! Here's everything you need to know to get started

Good news! It's a great time to become a software developer. The tech industry is booming, with the National Skills Commission projecting a 27% increase in this role between 2021 and 2027. The Tech Council of Australia also has big employment goals. It's aiming to have a massive 1.2 million people employed in tech jobs by 2030.

Software development is also an awesome STEM career if you have another passion or interest that you'd like to combine it with. That's because developers are needed to create programs and apps in all kinds of industries – retail, finance, health, manufacturing, defence, space and beyond. – *Louise Meers*

GOOD TO KNOW

If you want to be a software developer, you'll need to be across the following:

✔ **PROGRAMMING LANGUAGES**

✔ **DATA STRUCTURES AND ALGORITHMS**

✔ **VERSION CONTROL TOOLS**

✔ **DATABASES**

✔ **TESTING PROCESSES**

✔ **DEBUGGING**

✔ **OPERATING SYSTEMS**

✔ **CLOUD COMPUTING**

Language lowdown

Software developers need to know different programming languages so they can create (or code) programs and apps. Here are four popular ones to get a handle on:

1. **Python** 2. **Java**
3. **JavaScript**
4. **C#**

PICK YOUR PATH

Did you know there are different types of software developers, all with different focuses?

Front-end developers
They specialise in building the parts of programs and apps that users see and interact with.

Backend developers
Build and maintain the parts the users don't see – think databases, networking and security.

Full-stack developers
Someone who can work on the front-end and backend of a program or app.

Mobile developers
Make apps for mobile platforms like Android and iOS.

AUSTRALIAN TECH COMPANIES

Keep these employers in mind when you're looking for a job in software development

**Atlassian • Afterpay • Canva
Gilmour Space Technologies • Xero**

SHUTTERSTOCK

MYTHS BUSTED
SEPARATE FACT FROM FICTION AND UNCOVER THE REAL DEAL ON SOFTWARE CAREERS

What is a software developer?

Software developers are the people behind the computer programs and mobile and web apps you use every single day. They design, build, test, upgrade and maintain software to meet their company or client's needs, and make sure everything is running efficiently.

#1
"You need to be a maths genius to be a software developer."

Not at all! Having a good general knowledge of maths is enough and will help you in the problem-solving part of the job.

#2
"Learning to code is extremely difficult."

It's no harder than learning any other skill. It just takes time and practice to master it. Plus, there are heaps of free coding resources online to help you out.

#3
"Software developers work alone in dark rooms."

They usually work in teams including other devs, business analysts, product owners, project managers, UX designers, etc.

#4
"The only thing a software developer does is write code."

Sure that takes up part of their day, but they also need to attend meetings, troubleshoot problems, write support documentation, and brainstorm new ideas with co-workers.

SOFT(WARE) SKILLS

Sure, you'll need lots of tech skills in your toolkit, but the following are also super important in a software developer role:

- ✓ ATTENTION TO DETAIL
- ✓ GOOD COMMUNICATION
- ✓ CRITICAL THINKING
- ✓ PROBLEM SOLVING
- ✓ TIME MANAGEMENT
- ✓ TEAMWORK

Pay day
According to job site Seek.com.au, the average salary for a software developer ranges from

$90,000 to $110,000

FROM SPARKS TO SOFTWARE

A CAREER CHANGE INTO SOFTWARE DEVELOPMENT SCORED MATT GRANT HIS SCHOLARSHIP, INTERNSHIP AND NOW A FULL-TIME GRADUATE GIG
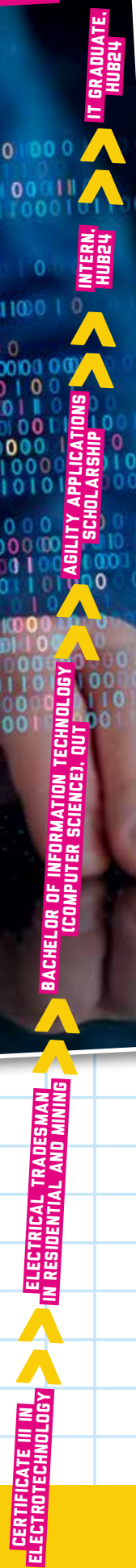
**MATT GRANT
IT GRADUATE**

After high school, Matt was working as an electrician when he had a light bulb moment: he realised the problem-solving he was doing as a tradie was better suited to a career in computer science!

Matt went on to study a Bachelor of Information Technology (Computer Science) at QUT and says specific units, like Programming Principles and Software Development, steered him in the direction of software development as a career. During his time at QUT, he was awarded the Agility Applications Scholarship, which kickstarted an internship with HUB24 — a company that provides tech solutions for the financial services industry.

That internship paid off and Matt is now working there as an IT graduate. In his day-to-day work, he adds new features to the company's products, and is currently rebuilding a web application, dividing it into a couple of smaller apps.

"This will make it easier for us to improve our apps without worrying about affecting others," he explains.

Matt has also enjoyed using machine learning to transcribe audio files and detect different speakers during a conversation.

"In the end you could open a web page, upload a file, and receive back a perfect script of the conversation with timestamps for when each speaker started and stopped talking," he says.

Matt believes there are lots of career opportunities emerging in software development, especially in machine learning and artificial intelligence.

"It is fast growing and I'm sure it will have plenty of excitement this decade."

If you're keen on being a software developer, Matt recommends working on your teamwork skills.

"It's almost impossible for one person to do the work of a whole team so the better you work together, the better the outcome for everyone," he says. — *Louise Meers*

> **"THE BETTER YOU WORK TOGETHER, THE BETTER THE OUTCOME FOR EVERYONE"**

IT GRADUATE, HUB24

INTERN, HUB24

AGILITY APPLICATIONS SCHOLARSHIP

BACHELOR OF INFORMATION TECHNOLOGY (COMPUTER SCIENCE), QUT

ELECTRICAL TRADESMAN IN RESIDENTIAL AND MINING

CERTIFICATE III IN ELECTROTECHNOLOGY

A day in the life of a…
SOFTWARE DEVELOPER

It ain't all PCs and Python – the life of a software developer is a little more varied (and creative)

EMILY CHANG
CLOUD ARCHITECT

If you're sold on a next-gen tech role, getting skilled up in software development is a seriously smart career move. You can land a job creating platforms for clients across almost every industry – Health! Tech! Retail! Education! – and with the widening skill gap, there's no shortage of jobs.

For QUT graduate Emily Chang, a double degree in Creative Industries (Screen Content Production) and IT (Computer Science) encouraged her to be equal parts creative and analytical.

While at uni she worked in the tax team at KPMG, then as a developer at Accenture, and was eventually recruited – via LinkedIn DMs – to a graduate role at tech giants Amazon Web Services (AWS).

"The resources and support AWS invests into graduates has made AWS a stand-out role for me," she says. "The goal is for us to be well equipped with the knowledge and skills to start working directly with customers and partners."

PROGRAMMING PARTY

One of the coolest things about Emily's role as a full-time Cloud Architect is the variety of projects she gets to work on. She spends 9ish to 5ish solving major software issues – and is currently working on a tech-heavy capstone project while honing her communication and customer-liaison skills.

"I enjoy the problem-solving aspects [of my job] and being able to think creatively," she says. "The coolest part is being able to learn something new every day."

Her advice to budding developers? "Start building and coding early! Get your hands on the many resources available online or even start a group in your school," she says. – *Cassie Steel*

> **START BUILDING AND CODING EARLY! GET YOUR HANDS ON THE MANY RESOURCES AVAILABLE ONLINE OR START A GROUP"**

CLOUD ARCHITECT, AWS

DEVELOPER, ACCENTURE

KPMG, RESEARCH DEVELOPER

BACHELOR OF CREATIVE INDUSTRIES (SCREEN CONTENT PRODUCTION) / BACHELOR OF IT (COMPUTER SCIENCE), QUT

Here's what an average work day for Emily might look like:

9am
I usually start my day by logging into my emails and Slack to catch up on messages from my colleagues!

10am
I then do work for our upcoming AWS Tech U capstone project, or on any projects I'm building to learn more about AWS' services.

12pm
I usually head out with some colleagues and grab lunch near the office.

Lunch Break

1pm
After a break, I continue the work I was doing in the morning either on developing projects, AWS certifications or theory study.

2pm
I need a brain break, so I head out with colleagues or to the kitchen for a quick snack or walk.

3pm
The afternoons are usually time for me to complete whatever I was working on earlier in the day, if I don't have any catch-ups with colleagues.

Get the job!

Ready to tackle a career as a software developer? Start here.

TEACH YOURSELF

Want to learn algorithmic thinking while on the bus? Teach yourself Python while watching TV? The following digital resources are all available online – for free.

StackOverflow: Keen on opinions from like-minded techy folk? StackOverflow is a question and answer site for programmers. Ask a question, and the community will answer – a total bible for both beginners and experts.

Scratch: Learn to code, even before kickstarting a tech degree! Scratch is an easy-to-follow guide on creating interactive stories, games and animations. Share with others on the platform for fun – and feedback – too!

CS First by Google: Learn to code with your classmates – or on your own! Play around with the one- to two-hour multi-day activities or bring your own stories to life using Scratch. For older students, Google also has applied CS skills where you can build Android games.

FILL YOUR FEED

Double tap these socials to fill your feed with career inspo:

TikTok: @QUTrealworld
Follow QUT for event coverage, campus tours and chats with real-life students. Take note of anything shared from their IT department – the behind-the-scenes stuff will get you pumped for studying tech at uni.

Instagram: @Atlassian
Follow local tech giant Atlassian for industry news, job opportunities and epic employee profiles. Look into their grad gigs too!

LinkedIn Get on it!
Make sure you hit up LinkedIn when hunting down role models, internships and top employers. Search by discipline, position, uni or name. Set on getting into tech? Create a profile before applying for your first grad gig.

NETFLIX AND UP-SKILL

Start streaming these tech-based TV shows before you become a software developer for real:

Zoey's Extraordinary Playlist: Cool tech meets musical drama? Sign us up. The storyline of this series is pretty quirky and not exactly scientific, but the main character? A total gun computer programmer working at a tech firm in San Francisco. Watch if tech + tunes is your jam.

Devs: The plot to this show – Software developers who are building their own alternate reality – is far from the real-life, but such a cool (and creepy) concept. Total proof that developers are creative geniuses!

Mr Robot: If cyber security is your thing, Mr Robot is for you. The main character is a software developer by day and an ethical hacker by night.

Electives checklist

Choosing high school electives? These subjects will set you on the right path to a career in software development.

✔ Computer studies ✔ Maths
✔ Engineering studies
✔ Design & technology

CAREERS WITH STEM