

Are you doing Leaving Certificate
or GCE Computer Science?
Check out the new 3 Year BSc Hons
(LY748) in Computer Science @
LETTERKENNY IT



lyit

Institiúid Teicneolaíochta
Leitir Ceanainn
Letterkenny Institute
of Technology

www.lyit.ie

What is this course about?

This is a 3-year Honours degree for students who have completed the Leaving Certificate Computer Science subject (with an O4 or H6) or a GCE in Computing (or equivalent e.g. BTech in Computing) in addition to the normal entry requirement for a level-8 course. Certain other equivalent qualifications such as a QQI FET Level 5 award in Computing will also be considered.

The opportunity to deliver the course in 3 years is based on the ability of students, who already have a background in computing, to “get up to speed” quickly on the core curriculum and rapidly progress to more advanced topics.

Year 1, 2 & 3 3 BSc Hons in Computer Science

Year 4 Specialised MSc at LYIT

*For a full list of specialised MSc programmes visit lyit.ie

Are there jobs for graduates?

The EGFSN forecast says that between 2018 and 2022 there will be 55,230 computing job openings in Ireland at level-8 and level-9. 35% of all “difficult to fill vacancies” Ireland are in ICT and there are approximately 5000 unfilled vacancies at any one time in ICT. According to a report by the Code Institute “The worldwide shortage of ICT talent that is threatening employment growth across the globe is also a significant issue here in Ireland,” Code Institute CEO Jim Cassidy said. “Over the next two years an expected 12,000 jobs are to go unfilled in the Irish ICT sector, which will have a direct knock-on impact on productivity and growth.” The report states that the UK is short 40,000 ICT graduates, Germany is short 43,000 ICT graduates, Sweden is short 63,000 ICT graduates and the US is short 750,000 ICT graduates. There has never been a better time to do a Degree in Computing!

The main employers are:

- Companies working in all aspects of business and computing
- Finance Companies of all types
- Health Care Providers
- Research Centers
- Media Companies
- Software Companies
- Security Companies

Graduate careers typically include:

- Programming
- Systems Design
- Data Storage and Security
- Project Management
- Data Analytics
- Data Storage and Management
- Database Administrator
- IT Consultant
- IT Manager
- Data Architect
- Systems Development
- Software Analyst
- Systems Administrator
- Machine Learning



What will I study?

This is a broad-based computing course covering a full range of core topics including programming, databases, networking, Machine learning and AI and Data Science.

3 Year BSc Hons in Computer Science				
Semester	Module	Mandatory / Elective	Credits	Hours per
1	Operating Systems	Mandatory	5	4
1	Object Oriented Programming	Mandatory	10	8
1	Social and Digital Communications	Mandatory	10	6
1	Mathematics and Computer Science 1	Mandatory	5	4
2	IT Infrastructure	Mandatory	5	4
2	Algorithmic Programming	Mandatory	10	8
2	Database Technology	Mandatory	5	4
2	Cloud and Mobile Technologies	Mandatory	5	6
2	Mathematics and Computer Science 2	Mandatory	5	4
3	Advanced IT Infrastructure	Mandatory	5	4
3	Academic and Technical Writing Skills	Mandatory	5	3
3	Software Implementation	Mandatory	5	4
3	Object Oriented Systems Analysis and Design	Mandatory	5	3
3	AI and Machine Learning	Mandatory	5	3
3	Scripting	Mandatory	5	3
4	Cybersecurity	Mandatory	5	3
4	Team Project	Mandatory	5	4
4	Secure Programming	Mandatory	5	3
4	Project Management	Mandatory	5	4
4	Data Analytics	Mandatory	5	4
4	Server-Side Scripting	Mandatory	5	4
5	DevOps	Mandatory	5	3
5	Research in Computing with Emerging Technologies	Mandatory	10	6
5	Software Engineering	Mandatory	5	3
5	Data Science 1	Mandatory	5	3
5	Client-Side Scripting	Mandatory	5	3
6	Legal, Ethical & Social Issues in Computing	Mandatory	5	3
6	Project Development	Mandatory	10	6
6	UX Design	Mandatory	5	3
6	Data Science 2	Mandatory	5	3
6	Computer Science	Mandatory	5	3

The Department of Computing at Letterkenny IT

The Department of Computing at Letterkenny IT has approximately 800 students studying on a wide range of programmes from Level-7 Ordinary degrees to level-10 research PhD (doctoral) programmes. It has approximately 36 lecturing staff who have a huge range of skills and qualifications. In addition to their primary computing qualifications many staff are cross-qualified in multiple disciplines such as engineering, science and business and all staff have either extensive experience in industry or are qualified to doctoral level with many staff having both. This ensures that our students

are being taught to the highest level by highly skilled, highly experienced professionals who are research active and fully up to date with today's computing industry.

Our approach to teaching emphasises real-world skills and practical work. All of our programmes are designed in consultation with industry leaders and we update our programmes regularly through a process of continuous engagement with industry. This ensures that our graduates are job-ready on day one with cutting edge skills and a mature understanding of the work place.

The Computing Industry in Ireland and Abroad

The computing industry in Ireland employs over 91,000 people, in 1,300 companies. Ireland is classed as being one of the most attractive locations in the world for investment in information and communications technology (ICT). There are over 300 overseas computing companies based in Ireland, including eight of the world's top ten computing companies. There are an estimated 4,500 IT vacancies at any given time with an average of 100 new job announcements each week. Currently there are approximately 3,500 people working in IT in Donegal/Derry. The "Forecasting the Future Demand for High Level ICT Skills in Ireland, 2017-2022" report says that "by 2020 there will be a demand for almost 6.3 million IT professionals in the EU and the supply of computing graduates is not keeping up.





So what kind of job might you work in?

When we talk about careers in computing everyone talks about how many jobs there are and how well computing graduates are paid. However that is only part of the advantages of being a computing graduate. There are a huge range of types of computing jobs. You can work outdoors building and repairing communications infrastructure, in creative fields designing and creating user interfaces for computer systems, creating computer graphics or designing computer games, in business as a systems

designer, a project manager, a team leader or as a data scientist, in healthcare as a medical IT researcher, developing wearable technology such as sensor gloves to help stroke victims or wearable apps to monitor patients health, in security developing more secure systems, tracking hackers, gathering digital forensics evidence for the Gardaí and many other security roles. These are just a few of the thousands of jobs available to ICT graduates.



Why study computing at Letterkenny IT?

Students come from all over the world to study computing in Letterkenny. At any time there are students from at least 20 countries studying computing with us. Students are attracted to study here because they know our qualifications are amongst the most highly respected in Ireland with excellent career prospects for

our graduates in Ireland or abroad. We have achieved these high standards because we have excellent lecturers, small class sizes, high practical content on our programmes, we teach cutting edge technology and our programmes are constantly updated with input from industry.

Student Support



The Department of Computing has designed a comprehensive range of initiatives to assist students with a view to improving pass-rates and academic standards. We regularly meet with students to discuss their progress and to identify any problems that students might be having as early as possible. The Department has also put in place extra tutorials for Maths with the Maths Resource Centre, which is located in the CURVE, and extra programming tutorials.

The Department also introduced and progressively expanded the use of peer-mentors. This peer-mentoring arrangement focusses primarily on programming and to a lesser extent mathematics. The programming and maths lecturers identify students who are experiencing difficulties and discuss the peer-mentoring option with them. Most students express a desire to participate. Volunteer students from 2nd, 3rd and 4th year students

who are interested in being a peer-mentor are matched with the 1st year students - mentors to mentees. The mentored student benefits from additional support and the mentee receives a Special Purpose Award (SPA) worth 10 credits in Peer-Mentoring. These SPA's are highly valued by employers.

In addition 1st and 2nd year students are assigned to small classes of about 25. A lecturer takes a group for both practicals and lectures for a full module so they have a chance to get to know the students, they also regularly check with students about their progress etc. Reducing a large group into groups of 25 is resource intensive but the Department believes that students perform dramatically better. Very few other colleges/universities in Ireland offer such small class sizes to students at the beginning of their studies.



NODE 05

NODE 02

Industry Testimonials

I have to give a huge amount of credit to the computing department and the college for preparing the students so well for industry, in particular in terms of qualifications. They also deserve great appreciation for facilitating the lectures and meetings for companies to talk to the students. Having the opportunity to work with so many highly skilled people and with the college being so helpful in working with companies like ourselves gives us huge confidence in our ability to meet our goals.

David Grey, Silver Cloud Lining

Letterkenny IT has been an invaluable partner in helping Pramerica to find talented, highly qualified candidates for technology and business services positions at Pramerica. Letterkenny IT has been to the forefront in developing our skill requirements and has adjusted its curriculum to ensure that its students have the appropriate technical and business skills, knowledge and the mindset needed for a global financial services organisation. I look forward to continuing to work closely with Letterkenny IT as it builds a pipeline of talent suitable for our workforce of the future.

Ciaran Harvey, Pramerica

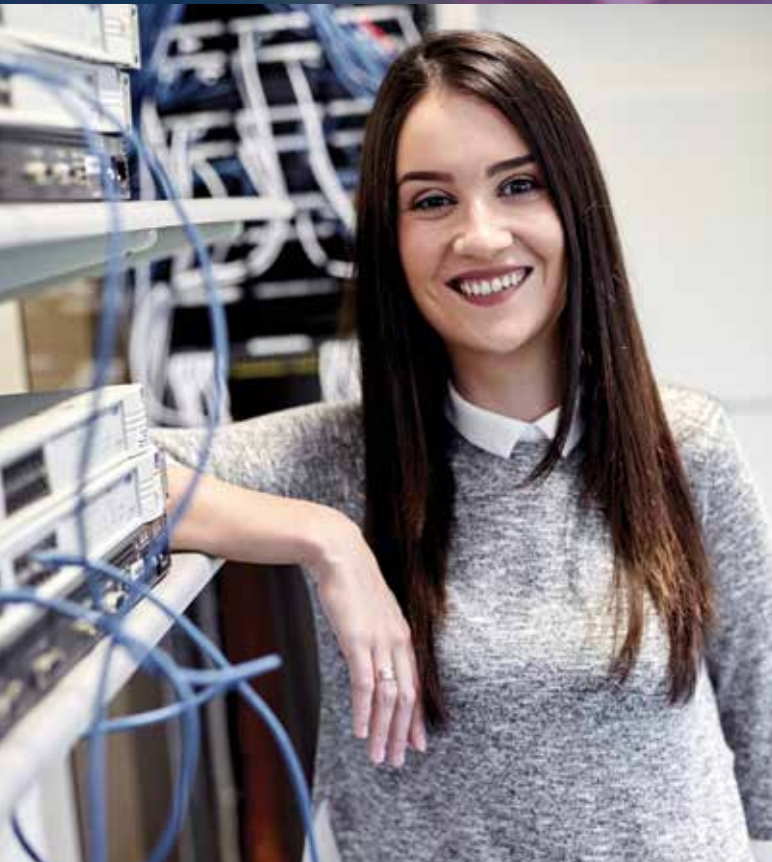
UnitedHealth Group, Letterkenny has forged a successful relationship with LYIT in recent years. This mutually beneficial relationship has brought high-caliber candidates in consideration for roles within our operations and IT business. We look forward to continuing to strengthen the relationship with the Letterkenny IT over the coming years.

Padraig Monaghan, UnitedHealth Group

At SITA we have realised great benefits in recruiting graduates from Letterkenny IT through a long standing relationship grown over the past ten years. The graduates come into the workplace well prepared and their skills set is closely aligned with SITA requirements and expectations. A significant percentage of the SITA Letterkenny workforce have come from Letterkenny IT and our collaboration efforts with Letterkenny IT over the past few years has provided SITA the opportunity to grow our workforce while maintaining our high standards.

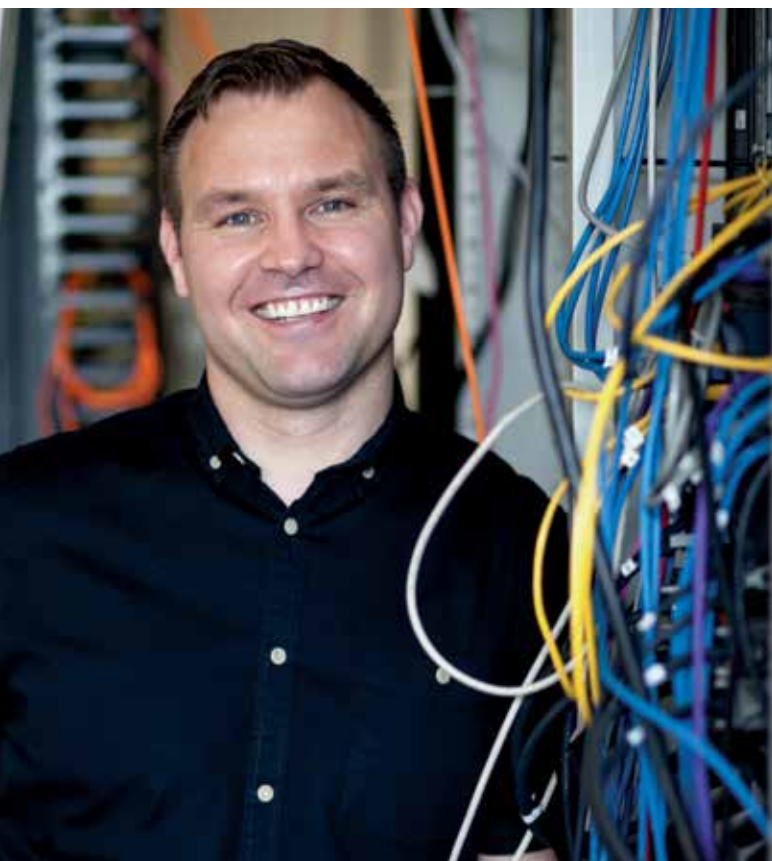
Michael Ellis, SITA

Student Stories



Jackie O'Mahony, is a Cyber Forensics Consultant at VM Forensics. "Within 6 months of graduating I was in court as a technical witness. I hit the ground running," she laughs. As a sort of 'digital detective', Jackie's job involves filling in the blanks using digital and forensic methods across all types of digital devices. "One day I could be involved in civil disputes such as data breaches and the next, in criminal investigations examining CCTV. It's really varied." "I loved the course, it lived up to my expectations. The way it was structured and how well it reflected the real world". Plus she says, "the dedication of the teaching staff was amazing. There's a genuine open door policy at Letterkenny IT, you could always ask for advice."

Jackie O'Mahony



Denis hasn't taken the orthodox route to his masters. Growing up in Buncrana, he left school at 15 and worked in the building trade for several years. "But I knew it wasn't for me," he says. Letterkenny IT has been a second home for Denis and the teaching staff and lecturers have backed him all the way. It was actually Denis's lecturers who suggested a slightly different route for him. "They saw that I enjoyed the computer programming more than the rest of the degree and suggested it would suit me better, so I switched to a full computer programming degree." Their advice turned out to be spot on and Denis has recently setup his own IT company. For the future the sky is the limit!

Denis Bourne



Typical Student Activities

womENCourage Celebration

This year the womENCourage Celebration of Women in Computing was held in Rome. In all 5 of our students were awarded Participation Scholarships by the ACM. This is a very high number and it reflects the commitment of our students to international collaborations.



MassDigi

Each year The Massachusetts Digital Games Institute (MassDiGI) at Becker College runs a high-profile games development competition to nurture the best computer games development talent in the United States. During those 12 weeks, with guidance from professional staff and game industry mentors, teams are responsible for all the work necessary to successfully launch their games. As in previous years, SIP students will enjoy the greatest game development experience of their lives. Our students also get their flights and visas paid for and receive a modest top-up to the stipend offered by Becker College.

The programmes accept just 24 interns and typically they come from 15 institutions including Becker College, Berkley College of Music, Brandeis University, Champlain College, Hampshire College, IUPUI, MIT, North-eastern University, RPI, RISD, Rochester Institute of Technology, University of Southern California, University of Southern Maine, WPI – and since 2015 Letterkenny IT. Letterkenny IT was the first non-America college to be invited to send a team to the event.

Zero Days Capture the Flag Days

For the fourth year in a row, members of the Letterkenny IT Ethical Hacking Society have attended the annual Zero Days Capture the Flag (CTF) event in Dublin. Capture the Flag events pit teams of students and industry professionals against one another in challenges designed to test their knowledge in topics such as web application security, programming, digital forensics and reverse engineering. This year saw 70 teams competing, making it the world's largest on-site single day CTF. Letterkenny IT entered two teams, one from fourth year Security and Digital Forensics and one from second year Security and Digital Forensics. As always, the event proved to be a learning experience, requiring competitors to research and learn about new technologies and concepts on the fly. Our team of second years placed 28th out of 65 teams (including industry professionals!) and our fourth year team placed sixth overall, proving the value of the experience gained at these events.

Courses for Educators

The Department of Computing runs two courses at levels 8 and 9 which are designed to allow educators to develop their ICT skills with a view to enabling them to teach ICT in a range of settings from Primary School to the Leaving Certificate Computer Science syllabus. The Higher Diploma in Computing for Educators (Level 8) allows educators to engage with material that will provide them with confidence and technical skills to deliver ICT in schools for the 21st Century. The certificates have been carefully crafted to ensure that educators will be given opportunity to gain proficiency and to derive tangible elements for their own classrooms. Each certificate is worth 10 ECT credits. Educators can take as many or as few of the certificates that they wish but completing 6 certificates will enable the participant to convert their 60 credits into a Higher Diploma

in Computing for Educators. The course is delivered in blended mode from both the LYIT campus and the Athlone Education Centre. The Level 9 Masters in Computer Science Education Research programme from the Computing Department at LYIT endeavours to better prepare students for a career as a computer science educator at primary, post-primary and Further Education levels. The Master's degree in computer science education is delivered in blended mode and provides educators with the skills to create curriculum and instruct students in the areas of modern technologies, computer programming, security and technology ethics. Course content for the MSc in Computer Science Education Research degree is research based and infuses best practices in computer science education. There are no exams as all modules are 100% continuous assessment.

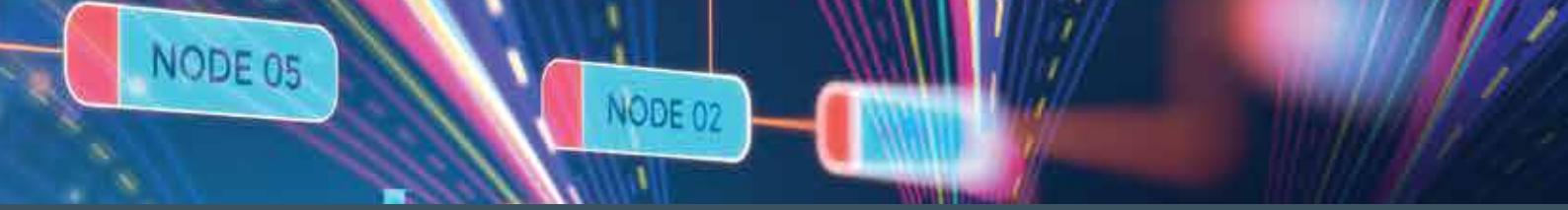
Google for Education Google Educator Grant

Dr Nigel Mc Kelvey, Lecturer in Computing, in collaboration with Dr Sharon McLaughlin Lecturer in Law, Department of Law and Humanities at Letterkenny IT, have been successful in securing a Google Educator's Grant to deliver workshops to educators on the theme of Digital Citizenship. Letterkenny IT along with TU Dublin and University of Limerick were three of 24 universities and non-profits across Europe and Africa to share €413,000 in funding under the Educator Grants.

With an increased emphasis on teaching computing in schools, there is increasing demand for teachers to introduce Digital Citizenship as part of the curriculum. The

workshops assists educators in developing their knowledge of digital literacy and pertinent factors effecting online activities.

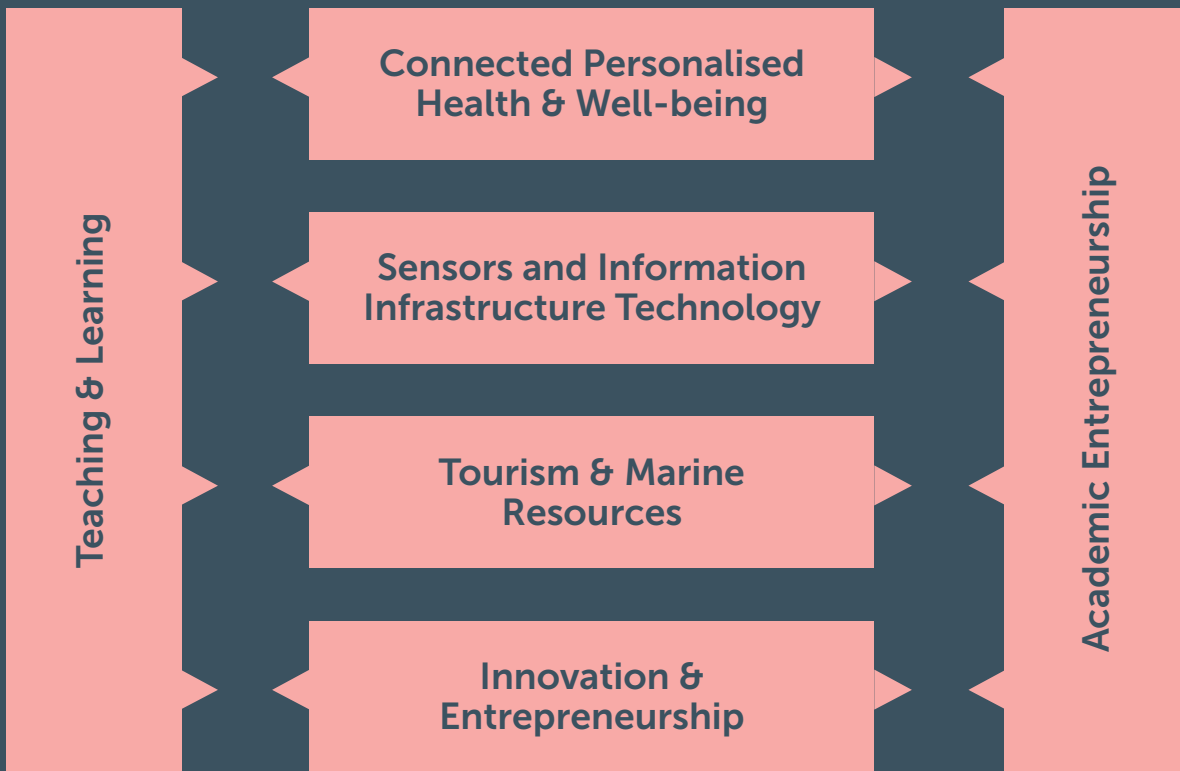




Research

The Department of Computing believes that to teach to the level that students and industry demands lecturing staff should be involved in continuous self-development and upskilling. One of the best ways to do this is for lecturers to work with research staff within the college and with other colleges and organisations in Ireland and internationally. Such research activity also underpins our planned transition to a Technological University.

To do this most effectively we engaged with industry locally and nationally to identify the research areas where they have the greatest need of support to develop specific expertise. After much consultation the main priorities were identified "Digital Healthcare" and "Data Management and Application". These themes are also strongly aligned to the research expertise of the academic staff and to the departmental level 9 taught MSc programmes to ensure a clear pathway for academic development for both students and lecturing staff into a research focused career.



Departmental research staff have worked diligently to build up strong partnerships with existing third level institutes such as Ulster University, Queens University Belfast and NUI Galway as well as a range of international universities and research organisations from Germany and Britain to America and China.

Requirements for Non EU students to apply to LYIT

To apply for an undergraduate programme at LYIT applicants must have completed their High School Diploma with good grades in mathematics and English (average 60%). Indian applicants must have completed Standard XII Examinations with minimum average of 60% in Mathematics and English.

To apply for a postgraduate programme at LYIT applicants must have an Honours Bachelor Degree from a recognised University in a discipline relevant to the postgraduate degree sought with minimum average of 60%.

Please note that applicants whose first language is not English are required to demonstrate their level of English competencies as follows:

Entry to cert in Preparatory Studies	Entry to Undergraduate Courses	Entry to Post Graduate Courses	Entry to Post Graduate Research Courses
IELTS score 5.0	Minimum IELTS band 5.5 with no band less than 5.0	IELTS score 6.0 with no band less than 5.5	IELTS score 7.0
	iBT 70 (minimum score of 15 in each component)	iBT 80 (minimum score of 15 in each component)	iBT 100
	PTE 42 or above	PTE 50 or above	PTE 65 or above
Or equivalent	Or equivalent	Or equivalent	Or equivalent

For further information contact:

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 www.facebook.com/lyit.computing

and our Twitter Feed

 [@LYITComputing](https://twitter.com/LYITComputing)

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