From the East to the Best

Introduction of Department of Computer Science & Information Engineering

Spring 2016
9 out of 10 are Computer Science!

(Data Source: http://www.theatlantic.com/business/archive/2014/03/which-college-and-which-major-will-make-you-richest/359628/)
Forbes--15 Most Valuable College Majors

1. Biomedical Engineering
2. Biochemistry
3. Computer Science
4. Software Engineering
5. Environmental Engineering
6. Civil Engineering
7. Geology
8. Management Information Systems
9. Petroleum Engineering
10. Applied Mathematics
11. Mathematics
12. Construction Management
13. Finance
14. Physics
15. Statistics

Out of 7 are Computer Science related!

(Data Source: http://www.forbes.com/pictures/lmj45jgfi/the-college-majors-that-are-worth-it/)
Forbes--Top Degrees For Getting Hired In 2015

Top Bachelor's Degrees In Demand

Bachelor of Science

- Finance
- Accounting
- Computer Science
- Mechanical Engineering
- Business Administration/Mgmt.
- Electrical Engineering
- Information Sciences & Systems
- Marketing
- Logistics/Supply Chain
- Management Information Systems

No. of Respondents That Will Hire
- Finance: 128
- Accounting: 125
- Computer Science: 120
- Mechanical Engineering: 116
- Business Administration/Mgmt.: 106
- Electrical Engineering: 104
- Information Sciences & Systems: 101
- Marketing: 93
- Logistics/Supply Chain: 91
- Management Information Systems: 87

Made with Chartbuilder

Data: National Association of Colleges and Employers

Forbes--Top Degrees For Getting Hired In 2015

Top Master's Degrees In Demand

Master of Science

- Finance: 54
- Computer Science: 53
- Accounting: 49
- M.B.A.: 45
- Mechanical Engineering: 45
- Electrical Engineering: 44
- Computer Engineering: 41
- Information Sciences & Systems: 36
- Logistics/Supply Chain: 33
- Human Resources: 32

**Forbes--Top Degrees For Getting Hired In 2015**

Top Doctorate Degrees In Demand

<table>
<thead>
<tr>
<th>Degree</th>
<th>No. of Respondents That Will Hire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Engineering</td>
<td>16</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>14</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>12</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>12</td>
</tr>
<tr>
<td>Physics</td>
<td>11</td>
</tr>
<tr>
<td>Materials Engineering/Science</td>
<td>10</td>
</tr>
<tr>
<td>Computer Science</td>
<td>9</td>
</tr>
<tr>
<td>Math/Statistics</td>
<td>9</td>
</tr>
<tr>
<td>Aerospace/Aeronautical Engineering</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry</td>
<td>8</td>
</tr>
</tbody>
</table>


Made with Chartbuilder

Data: National Association of Colleges and Employers
The most valuable degree in next 20 years +
Top Degrees For Getting Hired +
Skills can be broadly applied in any industries

Computer Science and Information Engineering!
Excellent Comprehensive University emphasizes both academic research and teaching.

Spirit: Freedom、Democracy、Creativity、Excellence

Value: Continuity、Innovation、Diversity。

<table>
<thead>
<tr>
<th># of Academic Colleges</th>
<th># of Bachelor Programs</th>
<th># of Master Programs</th>
<th># of Executive Master Programs</th>
<th># of Ph.D. Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>42</td>
<td>55</td>
<td>13</td>
<td>17</td>
</tr>
</tbody>
</table>

Bachelor | Master | Ph.D | Total Students | Faculty | Ratio | Staff
---------|--------|------|----------------|---------|-------|------
7,477    | 2,284  | 375  | 10,174         | 544     | 18.7 : 1.0 | 430
NDHU Prospect

- Excellent comprehensive University
- Emphasizing both academic research and teaching
- Strengthening faculty members’ specialties
- Enriching learning depth and scope
- Incubating competent, responsible, and successful leaders of the future society
- Developing unique regional features by integrating natural resources and cultural heritage
- Connecting with international academy; recruiting first-class students and scholars worldwide
- Best University in Taiwan
Largest and Most Beautiful
Campus in Taiwan
Largest and Most Beautiful Campus in Taiwan
Campus Facility

- Dormitory: 6,000 Air-Conditioned rooms guaranteed for all international students
- Shuttle Bus
- Library & Computer Center
- Bookstore, Cafeteria, Restaurants
- Banks, Postal Office, Coffee Shop
- Golf Court, Rock Climbing Arena
- Cricket Ball, Football, Soccer fields
- Swimming Pool (in/outdoor)
- Kayak, Sailboat
- Basketball, Volleyball, Badminton, Tennis Courts
- Gym, Weight Training, Running Track
- Bicycle Lanes
- Guest Hotel
NDHU Library

Reading Room

Display Area

Microfilm Room
NDHU E-Learning Environment

- Academic Network Hub Center of Taiwan
- Complete E-Learning Environment
  ex: Long-Distance Learning classroom, Multimedia classroom, e-learning platform, e-systems…etc.
- Fully covered by high-speed internet access 24-hrs including academic buildings, dorm rooms, & sport fields.
Sport Facility

國立東華大學 體育中心
NDHU Center for Physical Education
Campus Buildings

Engineering Building (Department Offices of CSIE and Electronic Engineering)

Indigenous Studies Building
Poetic European Campus

Administrative Building & Humanity Buildings
Modern Dormitory & Living Space

- All new 6000 Air-Conditioned private rooms with bathroom inside.
- Bright large living space.
- Dormitories are guaranteed for all international students.
- Prayer rooms, Kitchens, Community rooms, Study centers.
- 24-hr Managers and Campus policemen on duty.
- Campus Shuttle Bus run between campus and downtown every hour.
- Comfortable and Convenient living environment.
Modern Dormitory (inside)
Shuttle Bus

Train Station within walking distance

Shopping Stores & Restaurant outside of campus
International Campus

- Exchange Opportunities in Summer/Winter
- Cooperate with > 124 universities around the world
- Bachelor and Master Programs Taught in English
- Scholarships for International students
- Free fundamental Chinese classes
- Bilingual Staff to assist students
## International Students on campus

<table>
<thead>
<tr>
<th></th>
<th>2012 School Year</th>
<th>2013 School Year</th>
<th>2014 School Year</th>
<th>2015 School Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>140</td>
<td>160</td>
<td>205</td>
<td>233</td>
</tr>
<tr>
<td>Exchange</td>
<td>134</td>
<td>155</td>
<td>283</td>
<td>388</td>
</tr>
<tr>
<td>Oversea Chinese</td>
<td>210</td>
<td>230</td>
<td>254</td>
<td>318</td>
</tr>
<tr>
<td>Total</td>
<td>484</td>
<td>545</td>
<td>742</td>
<td>939</td>
</tr>
</tbody>
</table>

**Note:** Students graduate each semester.  
Here is the total in-status student counts as of 2016.03.21
## Low Cost for Higher Education

### 2015~2016 Estimated Expenses to Study at NDHU (Bachelor)

<table>
<thead>
<tr>
<th></th>
<th>NTD/semester</th>
<th>NTD/year</th>
<th>USD/year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal Expenses</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dormitory Fee</td>
<td>9,500 NTD</td>
<td>19,000 NTD</td>
<td>633 USD</td>
</tr>
<tr>
<td>Dormitory Deposit</td>
<td>1,000 NTD</td>
<td>2,000 NTD</td>
<td>67 USD</td>
</tr>
<tr>
<td>Book/Supplies</td>
<td>10,000 NTD</td>
<td>20,000 NTD</td>
<td>670 USD</td>
</tr>
<tr>
<td>Living Costs</td>
<td>36,000 NTD</td>
<td>72,000 NTD</td>
<td>2,400 USD</td>
</tr>
<tr>
<td>Food, transportation etc.</td>
<td>5,000 NTD</td>
<td>10,000 NTD</td>
<td>333 USD</td>
</tr>
<tr>
<td><strong>Total Personal Expenses</strong></td>
<td>61,500 NTD</td>
<td>123,000 NTD</td>
<td>4,100 USD</td>
</tr>
</tbody>
</table>

### Tuition fees and Miscellaneous fees

<table>
<thead>
<tr>
<th></th>
<th>NTD/semester</th>
<th>NTD/year</th>
<th>USD/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Science and Engineering</td>
<td>55,580 NTD</td>
<td>111,160 NTD</td>
<td>3,750 USD</td>
</tr>
</tbody>
</table>

### Total Expenses

<table>
<thead>
<tr>
<th></th>
<th>NTD</th>
<th>USD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Expenses</strong></td>
<td>117,080 NTD</td>
<td>7,850 USD</td>
</tr>
<tr>
<td></td>
<td>+ (3,060*credit) NTD</td>
<td>+ (102*credits) USD</td>
</tr>
</tbody>
</table>

### (Master & Ph.D.)

<table>
<thead>
<tr>
<th></th>
<th>NTD/semester</th>
<th>NTD/year</th>
<th>USD/year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal Expenses</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dormitory Fee</td>
<td>10,700 NTD</td>
<td>21,400 NTD</td>
<td>713 USD</td>
</tr>
<tr>
<td>Dormitory Deposit</td>
<td>1,000 NTD</td>
<td>2,000 NTD</td>
<td>67 USD</td>
</tr>
<tr>
<td>Book/Supplies</td>
<td>10,000 NTD</td>
<td>20,000 NTD</td>
<td>670 USD</td>
</tr>
<tr>
<td>Living Costs</td>
<td>36,000 NTD</td>
<td>72,000 NTD</td>
<td>2,400 USD</td>
</tr>
<tr>
<td>Food, transportation etc.</td>
<td>5,000 NTD</td>
<td>10,000 NTD</td>
<td>333 USD</td>
</tr>
<tr>
<td><strong>Total Personal Expenses</strong></td>
<td>62,700 NTD</td>
<td>125,400 NTD</td>
<td>4,180 USD</td>
</tr>
</tbody>
</table>

### Tuition Fees and Credit Fees

<table>
<thead>
<tr>
<th></th>
<th>NTD/semester</th>
<th>NTD/year</th>
<th>USD/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Science and Engineering</td>
<td>25,800 NTD</td>
<td>51,600 NTD</td>
<td>1,720 USD</td>
</tr>
<tr>
<td></td>
<td>3,060/credit</td>
<td>3,060/credit</td>
<td>102 USD/credit</td>
</tr>
</tbody>
</table>

### Total Expenses

<table>
<thead>
<tr>
<th></th>
<th>NTD</th>
<th>USD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Expenses</strong></td>
<td>88,500 NTD</td>
<td>5,900 USD</td>
</tr>
<tr>
<td></td>
<td>+ (3,060*credit) NTD</td>
<td>+ (102*credits) USD</td>
</tr>
</tbody>
</table>

NTD = New Taiwanese Dollar,  USD = U.S. Dollar

First-year students should anticipate additional expenses to settle down. (e.g. computer, bed sheet, pillowcase, etc.)

The above amounts are estimated and will be affected by choice of living style and personal needs.
Department of Computer Science & Information Engineering

- Most comprehensive programs
  - Bachelor
  - International Bachelor
  - Master
  - International Master
  - Executive Master
  - Ph.D.

✓ Expanding International Cooperation
✓ Expanding Industrial/Research Cooperation
✓ Expanding International Student Recruitment
✓ Accumulating abundant experiences in teaching, researching, course quality, and student counseling.
Excellent faculty

✓ 20 full-time professors, all with Ph.D. degrees.
✓ 12 professors ( > 60%) used to work in the industry.
✓ 15 among them were awarded national or international honors: Fellow of Institute of Engineering & Technology, Chess Championship of Computer Olympiad, Gold Prize Award for “Ideas-Inventions-New Products” (IENA), Best IICM Master / PhD Thesis Award, Top Scholar of Journal of System & Software, Gold Prize for 4C Digital Design Contest, National Science Council Excellent Scholar Winners…

![Bar chart showing the distribution of faculty members and awards.](chart.png)
3 Programs and Faculty
Diversified Researches

1. Cloud Computing & Big-Data Processing
2. Multimedia Systems
3. Computer Networks and Distributed Systems
4. Data and Knowledge Base Systems
5. VLSI Circuit & Embedded Systems Design
6. Parallel & Distributed Computing
7. Mobile & Pervasive Computing
8. Software Engineering
9. Cryptography and Information Security
10. Computing Theories and Algorithms
11. Human-Machine Interaction Systems
12. Programming Languages and Compiler Systems
13. Artificial Intelligence & Learning Machine
14. Bioinformatics
15. Computer Graphics & Digital Games
16. Decision Support Systems
22 Research Laboratories

- Cloud Computing & Big-Data Processing Server
- Image and Video Processing Laboratory
- Computer Systems Laboratory
- Software Engineering Laboratory
- Graphs and Bioinformatics Algorithm Laboratory
- Compiler Technology and Application Laboratory
- Multimedia Interaction Technology Laboratory
- Computer Vision and Virtual Reality Laboratory
- Pervasive Computing and Data Management Laboratory
- Graphics Animation Multimedia Edutainment Laboratory
- Cryptography and Information Security Laboratory
- Artificial Intelligence Laboratory
- Digital Image and Vision Computing Laboratory
- Decision Support Systems Laboratory
- Advanced Network Technology Laboratory
- Distributed Computing Laboratory
- Intelligent Systems Laboratory
- Internet Computing and Application Laboratory
- Learning Technology Laboratory
- Interconnection Network and Fault Tolerant Computing Laboratory
- Mobile Computing and Knowledge Engineering Laboratory
- Wireless Internet Service Engineering Laboratory
Outstanding research performance

✓ Each of our professors has at least one National Science Council-sponsored project per year.
✓ Our research fund and research achievements have been listed among the best ranking universities in Taiwan.
✓ Actively participate in international conferences and exchanges.
✓ Generate numerous publications.

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSC Research Fund (US dollar)</td>
<td>$568,000</td>
<td>$415,000</td>
<td>$969,000</td>
<td>$448,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>SCI * Journal Publications</th>
<th>Conference Publications</th>
<th>Total</th>
<th>Ave. publication per each CSIE’s Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>64</td>
<td>48</td>
<td>112</td>
<td>5.09</td>
</tr>
<tr>
<td>2012</td>
<td>58</td>
<td>38</td>
<td>96</td>
<td>4.36</td>
</tr>
<tr>
<td>2013</td>
<td>55</td>
<td>45</td>
<td>100</td>
<td>5.00</td>
</tr>
<tr>
<td>2014</td>
<td>41</td>
<td>56</td>
<td>97</td>
<td>4.85</td>
</tr>
<tr>
<td>2015</td>
<td>35</td>
<td>55</td>
<td>90</td>
<td>4.50</td>
</tr>
</tbody>
</table>
English Textbook written by our professors
CSIE’s Students come Around the World!

- Mongolia: 12%
- Swaziland: 12%
- Belize: 8%
- Honduras: 8%
- Brazil: 8%
- Nepal: 8%
- El Salvador: 6%
- Gambia: 6%
- Germany: 4%
- Guatemala: 4%
- Nicaragua: 2%
- Nauru: 2%
- Vietnam: 2%
- Germany: 2%
- Czech Republic: 2%
- India: 4%
- Saint Lucia: 4%
- Saint Kitts and Nevis: 8%
- Malaysia: 4%
- Malaysia: 4%
- Gambia: 6%
Flexible yet Solid program design

Core Program of Computer Science

Program of Network and System

Program of Multimedia and Intelligent Computing

Fundamental Program of Electrical Engineering and Computer Science

Primary Programming Proficiency Exam

Experiment

Special Project

Programming Contest
## Modularized Program

<table>
<thead>
<tr>
<th>College of Science and Engineering</th>
<th>Professional Elective Programs</th>
<th>Core Program</th>
<th>Fundamental Program</th>
<th>Liberal Arts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interdisciplinary Course Program</strong></td>
<td>Program of Nanotechnology 21</td>
<td>Core Program of Mathematics (I) 26</td>
<td>Fundamental Program of Applied Math. 23</td>
<td></td>
</tr>
<tr>
<td><strong>DEPARTMENT OF Applied Mathematics</strong></td>
<td>Program of Stat. &amp; Data Analysis 21</td>
<td>Core Program of Mathematics (II) 21</td>
<td></td>
<td>University Core Curriculum 43 credits (Languages 9 credits, Physical Education 4 credits, Service Learning 2 credits, Elective Core Courses 28 credits)</td>
</tr>
<tr>
<td></td>
<td>Program of Information Science &amp; Math Computation 21</td>
<td>Core Program of Stat. Science (II) 21</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Program of Mathematical Science 27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DEPARTMENT OF Electrical Engineering</strong></td>
<td>Program of Computer and Communications 21</td>
<td>Core Program I of Electrical Engin. 25</td>
<td>Fundamental Program of Electrical Engineering 23</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Program of Microelectronics and Control 21</td>
<td>Core Program II of Electrical Engin. 25</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DEPARTMENT OF Computer Science and Information Engineering</strong></td>
<td>Program of Multimedia Technologies and Applications 21</td>
<td>Core Program of Computer Sci. (I) 26</td>
<td>Fundamental Program of Electrical Engineering and Computer Science 23</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Program of Network and System 21</td>
<td>Core Program of Computer Sci. (II) 23</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DEPARTMENT OF Physics</strong></td>
<td>Program of Nano Science and Optoelectronics 21</td>
<td>Core Program of Physics (I) 22</td>
<td>Fundamental Program of Science 21~22</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Program of Theoretical and Computational Physics 21</td>
<td>Core Program of Physics (II) 23</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Program of Biophysics and Material Physics 21</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CSIE Undergraduate Programs

Professional Elective Programs (21 credits)
Various and ample choices. Students can study them based on interests and career focuses.

Core Program of Computer Science (II) (23 credits)
The central core of CSIE. Courses deepen and widen students’ abilities, cover both theories and hand-on learning.

Core Program of Computer Science (I) (26 credits)
The entry step into CSIE field. Courses cover basic programming, hardware, and mathematics areas.

Fundamental Program of Electrical Engineering and Computer Science (23 credits)
The common base for EE and CSIE students. This program contains math, physics, & computer fundamental classes.

Program of Multimedia and Intelligent Computing
Program of Network and System
Professional Elective Program

Program of Multimedia and Intelligent Computing

- Multimedia
  - 3D Computer Graphics on Game Development
  - Image Processing, Pattern Recognition
  - Computer Vision
  - Intelligent Computation, Learning Technology
  - Database Structure, Information Retrieval
  - Artificial Intelligence, Data Mining and Applications

- Intelligent Computing
  - Intelligent Computation, Learning Technology
  - Database Structure, Information Retrieval
  - Artificial Intelligence, Data Mining and Applications
  - Computer Networks and Communications
    - Wireless Networks
    - Computer Networks
    - VLSI
    - Software Development for Embedded Systems
    - Wearable Systems

Program of Network and System

- Network
  - Computer Networks and Communications
    - Wireless Networks
    - Computer Networks
    - VLSI
    - Software Development for Embedded Systems
    - Wearable Systems

Professional Elective Program
Research priorities for the next five years

- Digital Content and Multimedia
- Cloud & Big Data Integration, Analysis, and Application
- Mobile Sensing, Intelligent Living, and Wearable Systems
- The new generation of World Wide Web and Internet of Things (IOT)

Interdisciplinary Plan

Industry-University Collaboration

Prototype into Products & Value Increment
Beginning from the 2nd semester of the 3rd year, undergraduate students can apply for the permission to study the graduate-level courses. Once approved, such students become “pre-qualified graduate students”.

The pre-qualified graduate students should receive their bachelor degrees on or before the 2nd semester of the 4th year (or the 8th semesters in total), and participate the examination or the application selection to enter the master program. Once approved, such students become true graduate students of CSIE.
2. Structured Curriculum Programs

The concept of the structured curriculum programs was originated by the former President of the University, Dr. Huang, who proposed the system after surveying various curriculum systems around the world to create a flexible system that was applicable under the current Taiwan that students were able to study an additional minor or even another easily. A well-designed curriculum system can alleviate teachers’ teaching burden, teaching quality, and it increases students’ motivation on learning as well as their ability in employment market. This system also provides a feasible direction for reformation of Taiwan.

The basic concept of structured curriculum programs is to modularize the relevant subjects, so students can easily focus on the classes to build the knowledge. For a young college student who still finding a direction for study, these structured courses undoubtedly serve as a helpful guide and saves lots of time. Also, teachers are on the core courses of program and avoiding being distracted into unrelated matters resources and results in extra burden.

Our curriculum programs are structured as follows: in addition to the General Requirements (通識規定) which regulated by the university, students are required Major Programs of the department. Take the Department of CSIE for example, programs consist of three programs: Fundamental Program of Electrical Engineering (電機基 année), and Core Program of Computer Science (電機基礎) and Core Program of Computer Science I.

### Careers & Prospects

A Roadmap

Updated April 11, 2013

Department of Computer Science and Information Engineering
National Dong Hwa University
Great Achievements by our students

- CSIE Students won Number# 1 Champion of 2015 ITSA Contest

- Sport Timing System used in East Coast Marathon was development by CSIE Ph.D./Master/Undergraduate students team. True example of from Prototype into Product!
Great Achievements by our students

- **5 Gold Prize** and **1 Bronze Prize** from ICGA, 2014.

- Chinese Chess Artificial Intelligent Software—**NDHU 7**, successfully challenged human brain for the **World Record**, on **June, 30, 2013**.

Great Achievements by our students
Advanced research equipments

Computer Classrooms
Enthusiastic Learning

Interacted Classroom

Lecture Seminar
Family-like study environment

✓ School Level—Offices of International Affair, Academic Affairs, Student Affairs
✓ Department—CSIE Family mentor teachers, family companions
✓ Staff—Bilingual Staff in department office
✓ Class—Classmates interaction
✓ Supporting Groups—Student Associations, Sport Teams, Religion gatherings...
NDHU CSIE，Like A Family
NDHU CSIE, Outgoing Together
Various CSIE Activities
NDHU CSIE - Department Office
Benefits to study NDHU CSIE

✓ Amazing Natural Wonders / Comfortable Living Environment
✓ NDHU Scholarship for excellent students
✓ Great Academic / Research Environment
✓ Specious and Fully Equipped Research Lab
✓ Close interaction with professors and classmates
✓ Hands-On projects in all research labs
✓ Practical Training opportunities on-/off- campus, NDHU Innovation Incubation Center, and allied companies
✓ Industrial Internship opportunities during the summer vacation
Be Part of the Top Team
~Join Dept of CSIE, NDHU~

Department of Computer Science & Information Engineering
National Dong Hwa University, Taiwan, R.O.C.

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