Application form for an internship at Clever Cloud

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On 10/03/2024

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Thank you for your interest in Clever Cloud!

At Clever Cloud, we want to rethink what a Cloud Service Provider should be for businesses and developers around the world. We deal with complexity so that our customers don’t have to. Our mission is simple: Build a powerful, versatile yet simple to use, Cloud Platform.

We are looking for engineers who share our mission.

Our most deeply held engineering belief is in the deep understanding of technology. Mastering a domain area can be a life challenge, and there isn’t always a clear path to solve a problem. As if that weren’t enough, we believe that true magic happens when hardware and software are designed to work with one another. Generally speaking, deep understanding is key for good engineering designs.

We are looking for engineers who like to solve hard problems.

At Clever Cloud, we have simple values we think are important to work together. Differences between people are the driver to an open mindset which turns to be key to engineering: surpass our own belief, understand alternative ways of thinking or rethink the status quo.

Candor	Diversity	Optimism	Rigor	Transparency
Courage	Empathy	Resilience	Teamwork	Urgency
Curiosity	Humor	Responsibility	Thriftiness	Versatility

We are looking for engineers who share our values.

We believe that the best basis for assessment of an engineer is not through their performance on an arbitrary oral exam, but rather through their own expression. That’s why we use interviews to deeply understand the complete engineer who your work indicates you to be.

You should find that these candidate materials will take no more than a couple of hours to gather; please fork or clone this document, and for each section, please use the space you need, expanding into additional pages as necessary. When completed, please export this document as a PDF and submit it with your application at jobs *AT* clever-cloud.com. Note we mostly use english for written work, unless it's a real issue for you, please use english to answer.

Questionnaire

Please answer the following questions, using as much space as you need. All of these questions are important, but the final question is probably the most important one; take your time in answering it!

What work have you found most technically challenging in your career and why?

> During my studies, I faced the challenge of programming an electronic device comprising a microcontroller and three different sensors. The major challenge lays in optimizing the program, which was initially too complex for the microcontroller's capabilities. I wanted to integrate all the planned functionalities so I had to optimize resource usage and memory management, For example, I optimised the system's functionality by making it run only when needed, with a defined number of cores and memory space allocated in advance. I defined these two elements after running tests and using a profiler. Thanks to this optimisation, I was able to run the code on the programming board without any slowdowns or crashes. This led me to delve into complex technical documentation to further understand the microcontroller's internals. I also learned to use debugging tools to diagnose issues in my program and profiling tools to identify performance bottlenecks. I had to be rigorous in adhering to strict technical constraints and adopting new tools to solve problems that I had never encountered before. Despite facing significant complexity, I found solutions to achieve my goals without compromising the original vision.

What work have you done that you were particularly proud of and why?

> SmartCampus is an innovative project that I worked on for my university course, aimed at managing the environment in the classrooms of our building. Data acquisition systems have been installed in each room to measure temperature, humidity, and CO2 levels. This information is transmitted via an HTTP POST request to a REST API, which records it into a database. A web application then allows real-time visualization of this data and offers personalized recommendations to room users, based on the collected measurements. For example, if the temperature exceeds a certain threshold, the application suggests opening windows for ventilation. A designated administrator can monitor this information through a dashboard, displaying data in the form of tables and graphs, enabling efficient management of the ambiance in each room.

> I am particularly proud of what I achieved with this project. I had never integrated both frontend and backend systems before. I found that my experience working in C/C++ meant that the controller integration was completed rapidly. I enjoyed working on Symfony to develop the frontend as I had to use a different mindset when coding compared to when I use C/C++.

When have you been happiest in your professional career and why?

> Although I am still a student, I have been happiest when I am working on projects that work on low level components such as microcontrollers. I have been using Arduino for around 5 years and I have developed many different components as a hobby. This led me to work on more higher level software such as video games and the opportunity to explore other languages such as Python and Symfony.

When have you been unhappiest in your professional career and why?

> Sometimes, especially at the beginning of the semester, I find some classes boring. This sense of boredom mainly stems from the fact that, although theoretical courses are important, they fail to capture my attention. I am someone who needs practical experiences. Experimenting and learning by doing are the aspects of the learning process that I prefer. Therefore, I feel less motivated when the courses offer few practical opportunities. However I do understand the importance of acquiring strong theortical foundations and therefore I apply myself to overcome the fact that I do not always enjoy those courses.

Regarding CleverCloud's values, is there any that you oppose?

> I believe the values described are essential for a meaningful work ethic.

For a pair of CleverCloud's values, describe a time in which the two values came into tension for you or your work, and how you resolved it.

> My curiosity sometimes clashed with my rigor. For instance, I faced technical difficulties due to a lack of knowledge in certain areas. To address this, I devoted time to deepen my understanding in these subjects. However, I often found myself engrossed in learning new concepts, which detracted from the time allocated to my projects. Ultimately, although I resolved the encountered issues, I exceeded the initially set deadlines. This experience taught me to reassess my organization in order to manage my time with greater rigor.

What do you think should be improved on our product?

> Your products are amazing! However, I think it would be interesting to make them even more accessible to people who are not familiar with the cloud. By improving the user journey for example, I think it would be useful to implement a series of tutorial videos for new users. Sometimes when you are faced with a new product interface, it can be overwhelming to understand where to begin.

Why do you want to work for CleverCloud?

> I am eager to complete my internship at CleverCloud for several reasons. I am convinced that CleverCloud is a company where I can flourish professionally. As a French company with fresh ambitions, it would be an incredible opportunity for me to start my career with the CleverCloud team. There are not many companies that provide the opportunity to work on a large scope of technologies, especially Open Source software, and provide the support to contribute back to the community. I am interested in learning everything there is regarding the technical stack, from backend servers, networking, frameworks to frontend development. These are areas where I do not have the opportunity to interact with at great detail, at university in the context of my courses. An intership with a company like CleverCloud appears to me as the best way to get to work in these areas. I am confident that I have much to learn at CleverCloud and am motivated by the prospect of contributing to your mission.

Work samples

The ultimate measure of an engineer is our work. Please submit between one to three work samples, providing links if/as necessary. This should be work that best reflects you as an engineer -- work that you are proud of or you feel is otherwise representative of who you aspire to be as an engineer. If this work is entirely proprietary, please describe it as fully as you can, providing necessary context.

Work(s) sample(s)

I will describe two projects that I have completed and am proud of. I used my university internal Gitlab for these projects, hence why there is no activity on my GitHub account.

SmartCampus

This project, initiated by the city of La Rochelle, aimed at reducing unnecessary energy consumption and improving students' working conditions. We implemented a system of sensors that measure temperature, humidity, and CO2 levels in classrooms. These data are then sent to a REST API (Framework: API Platform, PHP) which stores them in a database (MySQL). Finally, a web application (Framework: Symfony, PHP) allows real-time visualization of these data and provides tailored recommendations to the room users, based on the captured values. For instance, if the temperature is too high, the application suggests opening the windows.

Three types of agents are involved in this project: Users, the Administrator, and the Technician. Each has a well-defined role and specific functionalities. Two personal spaces are accessible, one for the Administrator and one for the Technician. The Administrator has access to a dashboard for visualizing data through tables and charts (JavaScript), and can request the Technician for the installation of new sensors. The Technician's dashboard allows them to view current sensors and the Administrator's requests, and to install new sensors in the classrooms.

Web application developed with Symfony framework -> GitHub link

Features

- Login system for personal spaces
- Administrator’s personal space:
  - Global data visualization (averages, trends, etc.)
  - Room-specific data visualization
  - Sensor status display for a selected room
  - History of data feedback, archives, and temperature, humidity, and CO2 level charts
  - Request panel for installing new sensors
- Technician’s personal space:
  - Visualization of installed sensors and their status
  - Viewing Mission Manager’s requests
  - Ability to register new sensors in the database
- User space (public area):
  - Project explanation page
  - Option to search for a classroom for its recommendations
  - QR code scanning in the room for quick recommendations

Data acquisition system developed in C++ with Arduino framework -> GitHub link

Features

- Data capturing and data quality check through a filtering algorithm
- Data sent via wireless and HTTP POST requests to a REST API
- Access to a captive portal (like in airports) for device configuration (SSID, password, IP address, etc.)
- Anomaly detection and device status display via an LED
- Automatic night-time standby mode for energy saving
- Code optimization for minimal energy consumption
- Data recording in case of connection loss

This project developed my skills in: PHP, JavaScript, HTML, CSS, C++, SQL, REST APIs, Git, Symfony, profiling, networking, autonomy, teamwork and communication.

CharcloBross

CharcloBross is a video game inspired by arcade games and the MarioBros franchise. The objective of the game is simple: to accumulate as many points as possible. In this platform game, we play as a beggar. Our character defeats enemies by jumping on them and can also collect coins to boost his performance. The game was developed in C++ with QT Creator.

CharcloBross code link -> Github link

Writing samples

We have found that the engineers that we like to work with tend to value the written word. What's an example of writing that you are proud of? This writing can take a variety of forms, e.g.: \

- A block comment in source code
- A blog entry or other long-form post on a technical issue
- A technical architecture document, design document, specification, whitepaper or academic paper

Please submit at least one writing sample (and no more than three) that you feel represents you, providing links if/as necessary.

Writing sample(s)

> When we developed the SmartCampus project, we also decided to create a wiki to explain how the project works and to track its progress.
> This wiki can be accessed at the following address: https://github.com/Bonnemine-dev/SmartCampus/wiki
>
> We also used Miro to record our ideas. Miro primarily served as a draft for us, but it enabled us to visualize our ideas and share them with other group members.
> You can view our Miro board here: Miro board
>
> I also wrote a user manual for the sensor we developed.
> You can find this manual here: Manual

Analysis samples

A significant challenge of engineering is dealing with a system when it doesn't, in fact, work correctly. When systems misbehave, engineers must flip their disposition: instead of a creator of their own heaven and earth, they must become a scientist, attempting to reason about a foreign world. Please provide an analysis sample: a written analysis of system misbehavior from some point in your career. If such an analysis is not readily available (as it might not be if one's work has been strictly proprietary), please recount an incident in which you analyzed system misbehavior, including as much technical detail as you can recall.

Analysis sample(s)

> I had the opportunity to develop a small video game in C++ with a team of five, as previously mentioned. To program our game, we had to establish an organization and architecture. Once the entire team agreed, we began the development. However, we quickly faced problems related to our initial project organization. Consequently, we had to review everything, assess the pros and cons of our initial setup. After our analysis, we redefined a new plan, which proved effective for the remainder of the project. What I learned from this experience is that we knew when to say 'stop', to step back, and to identify what was going wrong. We were able to question ourselves and find solutions. This experience taught me a lot, especially about the importance of analysis in project management.

Presentation samples

Especially as engineers become more senior, oral presentation of work becomes an important vehicle for communication. If you have given a technical presentation that is publicly available, please provide a link to the slides (and the video if available). Engineers are often also very self-conscious about their presentations, so don't worry about any imperfections — and don't be concerned if it's brief or informal! If you don't have a publicly available presentation, please describe a topic on which you have presented in the past.

Presentation sample(s)

> SmartCampus was a project conceived by our professors. We were asked to develop a product, which we then had to deliver to clients on time. Our professors played the role of the client. On delivering the product, we began by reviewing the key points of the agreed specifications. Then, we conducted a complete demonstration of the product. This demonstration required meticulous preparation to decide which elements to present and in what order. Our plan was already well structured. We then discussed the parts of the specifications we were unable to fulfill and explained the reasons why. We also talked about any new features added and changes made to improve the product not initially mentioned in the specification. Finally, we discussed the any future changes envisioned, and then answered the clients' questions. I particularly enjoyed this task, as being comfortable with public speaking, I like presenting my work in front of an audience.