Procedures for the entrance examination

BTS Cloud computing / BTS cybersecurity

1) Exam

The entrance examination consists of multiple parts:

a) Practical part:

• Arithmetic's and English pretest

!! Applies only to students with a Luxembourgish technician diploma that <u>do NOT have</u> the "modules préparatoires"!!

- English multiple-choice questions and written answers about text comprehension.
- Answer questions about a text that is read aloud.
- Solve problems using elementary arithmetical operations, percentage calculation, powers and fractions.
- Here are a few some *sample* questions:
  - The bit is the most basic unit of information in data processing and digital communication (0 or 1). A byte has 8 bits. How many bits does a file with 25 bytes have?
  - A line has a theoretical transfer rate of 100 MB. In practice, 20% of the bandwidth is lost due to overheads. What is the actual bandwidth?
  - A website had 1,500 visitors last month. This month, it received 1,800 visitors. What is the percentage increase in visitors from last month to this month?
  - Divide 7.5 by 1.25 (rounded to two decimal places).
  - Multiply 3.14 by 2.718 (rounded to two decimal places).
  - 3/8 of a disk of 1TB is used for the operating system. What is the remaining size?
  - Suppose a computer processor operates at a clock speed of 1.25 GHz. If it executes 200 million instructions per second, what is the total processing power in instructions per second?

• Practical part on a computer skill test

!! Applies to all candidates!!

- comprehension of technical texts in the IT field in English,
- independent learning with the help of an online course about Linux,
- practical exercises applying the skills learned in the online course about Linux
- comprehension questions about the online Linux course

To prepare for these exams, you have access to a CISCO NetAcad Linux introductory online course. The questions to be answered in the practical part cover the material of this online course. The preparation of the course takes about 10 hours. Access to this online course is also permitted during the practical exam!

The questions are asked in English. Some answers are multiple choice, others are free text. You will also have to solve practical exercises using a Linux operating system. As access to the online course is guaranteed, simply copying texts will be penalised. The aim is to express yourself in your own words. Below are some *sample* questions:

- Explain what happens if the user types `LS` or if he enters `ls` in a Linux CLI. Is there any global advice you would give to this user?
- Give the command to list the entire contents (including hidden objects) of the sysadmin's home directory using an absolute path.
- How can you distinguish options from arguments in a Linux command?
- The first field in the display of a long listing may contain a symbol `d` or `-` . Explain the meaning of these 2 symbols.
- Being located in the directory `/etc/rc0.d` , give the command to copy the file `README` to sysadmin's Document folder using relative path.
- ...

b) Interview

• Self-presentation:

!! Applies to all candidates!!

- You must present yourself in English for 2 minutes. These 2 minutes (not 50 seconds, not 3 minutes - so prepare and practice) must be fully used by you! Topic examples:
  o Who are you? Where are you from? Age? Hobbies?
  o Former education?
  o What is your previous knowledge about computer science? What excites you about computer science?
  o What is your motivation to apply for this training?
- Based on your first BTS choice (Cyber or Cloud) explain in your terms what Cybersecurity / Cloud computing is about.
- We are grading your spoken language skills in English and French.
- We are grading your communication skills (verbal and non-verbal).

• Interview

The interview will last about 15 minutes. **The interview will start with a 2-minute self-presentation in English. This self-presentation must be thoroughly prepared as if it were a job interview!** Below are some *sample* questions that could be asked afterwards:

- How many BTSs does LGK currently offer and explain their differences?
- What is the name of the headmaster?
- Why did you choose to study computer science and why did you decide to go into cybersecurity?
- What is a virus? vulnerability? a threat? What is confidentiality?
- What is your experience with operating systems? What operating systems have you worked on?
- How much time do you think you will be able to invest outside of compulsory attendance hours?
- How would you react if your co-worker deleted the configuration of a switch in a rack that you share with him?

2) Ranking list compilation

1) In the 'Arithmetic's and English pretest', the candidate must obtain at least 50% of the points. The grade is not taken into account in the final ranking.
2) All candidates who have scored at least 10/20 in the practical part and the interview, will be selected first. The ranking will be based on the arithmetic mean of the scores of the two tests.
3) Then those who passed the interview but failed the practical part and achieved an average of more than 7/20. The ranking will be in descending order of the scores obtained.
4) Finally, those who passed the practical test but failed the interview and achieved an average of more than 7/20. The ranking is in descending order of the scores obtained.

Candidates who have successfully ranked but do not yet have a higher education entrance qualification (e.g. due to a supplementary examination), will be granted *conditional* admission.

The first 14 candidates in this ranking list will be admitted to the course. The others will be placed on the waiting list, in case a better placed candidate withdraws.

Those who fail *both* tests are eliminated.

3) Organisation of the examination

a) Practical part

- **For candidates with a Luxembourgish technician diploma who do NOT have the "modules préparatoires"**
  - **Monday, 1st July** 2024, from **3pm** to **4pm** at the LGK.
  - Please be present no later than 14:45 in front of room **E206**, 2nd floor bloc E.
- **For all the candidates**
  - **Monday, 1st July** 2024, from **4pm** to **6pm** at the LGK.
  - Please be present no later than 15:45 in front of room **E206**, 2nd floor bloc E.
  - Don't forget your access code for the online course on Linux.
  - Please present your identity card or passport.

b) Interviews

- **For all the candidates**
  - **Tuesday**, **2nd July** 2024 from 8am at the **LGK**, according to the schedule distributed the day before.

4) Publication of results

The results will be announced by e-mail after the examination committee meeting, at the latest on the Friday of the entrance examination week.