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to
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1. At Epitech you need a computer, you have the choice between taking a "gaming" personal computer with lots of colors everywhere or a personal computer "to code" or a macintosh. But you want to know the price of each of these computers: with these 3 pieces of information given by groups of Epitech comrades: Give the price for each type of computer.

a) Budget = 8200€

3 Items = (G_PC€ 2911.00 + Mac€ 2,499.00 + Asus_coding € 2,149.99) = 7559 euro
and 641 euro refundable to Epitech.

I. Gaming computer 1 piece:

Price: € 2911.00

Specific Uses For Product	Personal, Gaming, Business
Series	Chronos
Ram Memory Installed Size	16 GB
Operating System	Windows 10
CPU Model	AMD Ryzen 7
Brand	Skytech Gaming
CPU Manufacturer	AMD
Screen Size	1 Inches
Human Interface Input	Keyboard
Graphics Coprocessor	GeForce RTX 2070 Super 8GB GDDR6

ii. MACBOOK PRO 16 - I9 - 2,3GHZ - 16 GO RAM - 1 TO SSD - AMD RADEON 5500M

Price : € 2,499.00

MacBook Pro Touch Bar 16 (2020)

- ❒Intel Core i9 "Coffee Lake" 9980H processor at 2.3Ghz
- ❒8 Cores / 16 Threads - 16MB Cache L3
- ❒Turbo Boost at 4.8Ghz
- ❒16 "Retina LED display - Resolution: 3072 x 1920
- ❒16 GB ram DDR4 at 2667 Mhz

❒1TB (1000GB) SSD / Flash
❒Thunderbolt 3.0 x 4 / USB-C x 4
❒Intel UHD Graphics 630 + AMD RADEON 5500M (4 GB GDDR6)
❒Mac OS X Big Sur 11 pre-installed
❒Possibility to install Microsoft Windows 10/11 with Bootcamp
❒New product destocked
❒Comes in original Apple box
❒Price of this model on the Apple Store: 3199Euros
❒700 Euros in savings at Mac Trader France
❒Warranty: 1 year (Parts & labor)

iii. I prefer ASUS for my personal programming laptop :
Price : € 2,149.99

- NVIDIA® GeForce RTX ™ 3060 6GB GDDR6
- Windows 10 Home
- AMD Ryzen ™ 7 5800HS 3.0 GHz (16M Cache, up to 4.3 GHz)
- 16 GB of RAM (8GB DDR4 on board + 8GB DDR4-3200 SO-DIMM)
- 512GB M.2 NVMe ™ PCIe® 3.0 SSD
- 15.6 "WQHD (2560 x 1440) 16: 9, 165Hz display
- Anti-glare - Matte screen
- Brightness: 300 cd / m²
- Contrast: 1000: 1
- DCI-P3: 100%
- AZERTY backlit Chiclet keyboard
- Weight: 1.90 kg
- Dimensions: 35.5 x 24.3 x 1.99 ~ 1.99 cm

. Wi-Fi 6 (802.11ax)

- Bluetooth 5.1 (Dual band) 2 * 2
- 1x HDMI 2.0b
- 1x RJ45 LAN port
- 1x Card reader (microSD)
- 2x USB 3.2 Gen 2 Type-C with DisplayPort ™, power delivery and G-SYNC
- 2x USB 3.2 Gen 2 Type-A
- 1x 3.5mm Combo Audio Jack
- 90WHrs, 4S1P, 4-cell Li-ion
- ROG Backpack and ROG Impact Gaming Mouse included
- ø6.0, 200W AC Adapter, Output: 20V DC, 10A, 200W, Input: 100-240V AC, 50 / 60Hz universal
- Grey color

b) Budget = 10700€
2 game pc + 2 programming pc + 1 apple mac

I. Programming PC :

I prefer ASUS for my personal programming laptop:

Price : € 2,149.99 * 2 = 4299.98 euro

II. 1 apple Mac
MACBOOK PRO 16 - I9 - 2,3GHZ - 16 GO RAM - 1 TO SSD - AMD RADEON 5500M

Price : € 2,499.00

MacBook Pro Touch Bar 16 (2020)

MACBOOK PRO 16 - I9 - 2,3GHZ - 16 GO RAM - 1 TO SSD - AMD RADEON 5500M

III. Gaming Laptop : if it is only for playing game I will reduce price from this sector.

I would like to invest 3901.02 euro for gaming pc :

Pack PC Portable Gaming Asus F15-TUF566HM-HN080T 15.6" Intel Core i7 16 Go 512 Go SSD Gris + 6 mois d'abonnement Xbox Game Pass + Souris TUF M5

Price = 1950 euro per pice

Two gaming laptop = 1950 * 2 = 3900 euro approximately

c) Budget =20 100€

1 gaming laptop:

Price: € 2911.00

Specific Uses For Product	Personal, Gaming, Business
Series	Chronos
Ram Memory Installed Size	16 GB
Operating System	Windows 10
CPU Model	AMD Ryzen 7
Brand	Skytech Gaming
CPU Manufacturer	AMD
Screen Size	1 Inches
Human Interface Input	Keyboard
Graphics Coprocessor	GeForce RTX 2070 Super 8GB GDDR6

2. coding laptop: ASUS

price = € 2,149.99 * 2 = 4299.98 euro

- NVIDIA® GeForce RTX ™ 3060 6GB GDDR6
- Windows 10 Home
- AMD Ryzen ™ 7 5800HS 3.0 GHz (16M Cache, up to 4.3 GHz)
- 16 GB of RAM (8GB DDR4 on board + 8GB DDR4-3200 SO-DIMM)
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- Contrast: 1000: 1
- DCI-P3: 100%
- AZERTY backlit Chiclet keyboard
- Weight: 1.90 kg
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. Wi-Fi 6 (802.11ax)

- Bluetooth 5.1 (Dual band) 2 * 2
- 1x HDMI 2.0b
- 1x RJ45 LAN port
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- ROG Backpack and ROG Impact Gaming Mouse included
- ø6.0, 200W AC Adapter, Output: 20V DC, 10A, 200W, Input: 100-240V AC, 50 / 60Hz universal
- Grey color

3.mac:
MACBOOK PRO 16 - I9 - 2,3GHZ - 16 GO RAM - 1 TO SSD - AMD RADEON 5500M

Price = € 2,499.00 * 3 = 7497 euro

2. Chapter two: I am the Matrix!
Thanks to Epitech Lille, you have become an influential professional cybersecurity manager but there you are find yourself in front of this enigmatic message that you must decipher, you know that the answer is in French (you can ask for a hint if necessary):

I Mxqbmkp Tqttm zqowczmcf bc amzia ! Gwli

Answer:
Seems the text is encrypted. As it is in french text a French speaker can manually inner mining of the text manually by cipher ciphertext attack. An encryption algorithm is the method used to transform data into ciphertext. We can decrypt the massage by using decryption algorithm also.
Decryption is a process that transforms encrypted information into its original format.
There are some software also that we can use to solve the text but for that we need the key.
If any software is used to encrypt it than need know the key and software to decry-pt the cipher text into plain text.

I will ask what encryption algorithm you have been used for what was the key for the encryption method?
Then it is possible to decry-pt easily. If you used any specific algorithm to encrypt the message then need to know that.

3. Chapter Three: Foooood
At Epitech Lille all years ago, 257 students, 24 members of the pedagogy (including 14 "Aer" - students who accompany lower year students), but for the start of the school year we want to know how much to buy Donuts. To do this we wrote an algorithm that calculates how many Donuts to buy, here is the code in bold of this algorithm:

NumberDonut receives zero. 0
ChocolatPrevu receives zero. 0

Main Method
For each student do 257
  IncreaseNumberOfDonut (student, NumberOfDonut)

For each member of the pedago Do 24
If member equals Aer 14 14
  IncreaseNumberOfDonut (Aer, NumberOfDonut)

  else ?
  IncreaseNumberOfDonut (Framing, NumberOfDonut)

  ?
IncreaseNumberOfDonut (entry, NumberOfDonut)
NumberDonut increases by 1
If entry equals Aer

  IncreaseNumberOfDonut (student, NumberOfDonut)

  If ChocolatePrevu <17

ChocolatePrevu increases by 2+ ChocolatePrevu
  Otherwise
ChocolatPrevu increases by 1

If entry equals Supervisor ?

  IncreaseNumberOfDonut (Aer, NumberOfDonut)

>>> What will be the result of this program?

The program is executed by me with the C++ programming language and the executable code is as follows :

**3. Chapter Three: Foooood */*

```
#include <iostream>
using namespace std;

// function declaration

int IncreaseNumberOfDonut(int student, int numberDonut);
int IncreaseNumberOfDonutforSupervisor(int member, int aer, int entry);
int IncreaseNumberOfDonutforEntry(int member, int aer, int entry);
int chocolateCount(int chocolatePrev);

int main()
{

	int numberDonut = 0;   // NumberDonut receives zero.
	int chocolatePrev = 0; // ChocolatPrevu receives zero .
	int entrystudentNumber;
	int member;
	int aer;
	int supervisor;
	int entry;
	int student;

	cout << "Enter number of of student" << endl;
	cin >> student;

	cout << "enter  number of member" << endl;
	cin >> member;
	cout << "enter  number of entry" << endl;
	cin >> entry;
	cout << "enter number of aer" << endl;
	cin >> aer;

	cout << "enter number of supervisor" << endl;
	cin >> supervisor;

	cout << "Enter chocolate number:  " << endl;
	cin >> chocolatePrev;

	int chocolate = chocolateCount(chocolatePrev);
	int donut1 = IncreaseNumberOfDonut(student, numberDonut);
	int donut2 = IncreaseNumberOfDonutforSupervisor(aer, supervisor, entry);
	int donut3 = IncreaseNumberOfDonutforEntry(member, aer, entry);

	cout << "Total number of Chocolate: " << chocolate << "\n";
	cout << "Total number of Donut: " << donut1 + donut2 + donut3;
	return 0;
}

int IncreaseNumberOfDonut(int student, int numberDonut)
{
	for (int numberDonut = 0; numberDonut = student; numberDonut++)
```

```
	{
		return numberDonut;
	}
	/*
		If member equals Aer
			IncreaseNumberOfDonut(Aer, NumberOfDonut)*/
}

int IncreaseNumberOfDonutforEntry(int member, int aer, int entry)
{
	if (member == aer && entry == aer)
	{

		for (int numberDonut = 0; numberDonut <= aer; numberDonut++)
		{

			return numberDonut;
		}
	}
}

/*therwise
	IncreaseNumberOfDonut(Framing, NumberOfDonut)
		IncreaseNumberOfDonut(entry, NumberOfDonut)
			NumberDonut increases by 1 If entry equals Aer

			 */

/*entry equals Supervisor
IncreaseNumberOfDonut(Aer, NumberOfDonut) */

int IncreaseNumberOfDonutforSupervisor(int aer, int supervisor, int entry)
{

	if (entry == supervisor)
	{
		for (int numberDonut = 0; numberDonut <= aer; numberDonut++)
		{
			return numberDonut;
		}
	}
}
/*If ChocolatePrevu < 17 ocolatePrevu increases by 2 + ChocolatePrevu

	Otherwise

		ocolatPrevu increases by 1


		*/

int chocolateCount(int chocolatePrev)
```

```
{
        chocolatePrev = (chocolatePrev < 17) ? chocolatePrev + 2 : chocolatePrev + 1;
        return chocolatePrev;
}
```

Resulting output :
Enter number of of student
20
enter number of member
20
enter number of entry
20
enter number of aer
10
enter number of supervisor
10
Enter chocolate number:
16
Total number of Chocolate: 18
Total number of Donut: 60

4. Chapter Four: Passage to the Other World

Congratulations, you became AER in the second year of Epitech Lille! your first job optimizing rooms and the activities of the different student classes.

Here are the timetables for the 3 promotions :
tek1 (the first years ...)
tek2 (the secondyears …)
tek3 (we'll let you guess ...)

for this Monday morning, the promotions cannot be in the same time in the same room, and the goal is:

• Minimize the number of room changes
• Move students to the rooms closest to their previous ones

>>> How will you position the rooms on the activities to minimize room changes students ? Explain to us how you proceeded?

Monday Tek1:
9h00: KickOff Pool C (100 students) (duration 1h)
10h: individual point with the pedago (1 student every 10 minutes) (duration 2h)
11am: Graphic Bootstrap (40 students) (duration 1h)

Monday Tek2:
9h00: Kickoff Zia (50 students) (duration 2h)
11h: individual point with the pedago (1 student every 10 minutes) (duration 2h)
11:30 am: Kickoff Arcade (35 students) (duration 1 hour)

Monday Tek3:
9h00: Kickoff Cyrptography Project (40 students) (duration 1h)
10h: individual point with the pedago (1 student every 10 minutes) (duration 2h)
11 a.m .: Update on the year with the pedago (100 students) (duration 1 hour

Solution: we need to reschedule the class time for the students then it can be apply for the full week not only for Monday as follows:

<table>
<tr><th>Time Batch</th><th>9h–10 h</th><th>10h-11h</th><th>11h -12h</th><th>12h - 13h</th><th>11h -12h</th><th>12h -13h</th><th>13 h 15 h</th></tr>
<tr><td>Tek1</td><td>Graphic Bootstrap (40 students) (duration 1h) room 1</td><td>KickOff Pool C (100 students) room 1</td><td colspan="2">individual point with the pedago (1 student every 10 minutes) (duration 2h) room 2</td><td></td><td></td><td></td></tr>
<tr><td>Tek2</td><td></td><td></td><td></td><td></td><td>Kickoff Arcade (35 students) (duration 1 hour)

Room -2</td><td>Kickoff Zia (50 students) (duration 2h) room 2</td><td>individual point with the pedago (1 student every 10 minutes) (duration 2h) Room 2</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Free room for PC pool, when they don’t have presentation they can wait here
this pc pool can be for 100 students capacity Room 3</td></tr>
<tr><td>Tek3</td><td></td><td></td><td>Kickoff Cyrptography Project (40 students) Room-1</td><td>Update on the year with the pedago (100students) (duration1 hour.</td><td colspan="2">individual point with the pedago (1 student every 10 minutes) (duration 2h)

room 1</td><td></td></tr>
</table>

				Room 1	Free room for PC pool, when they don't have presentation they can wait here this pc pool can be for 100 students capacity **room 3**	

Programming solution:

```
#include <iostream>
using namespace std;

int main()
{
	// local variable declaration:
	char year = '1';

	cout << "**** To know your class schedule  enter 1 for 1st year , 2 for second year and 3 for 3rd year ***" << endl;
	cin >> year;

	switch (year)
	{
	case '1':
		cout << "You are Tek1 in First year your classes are as follows : " << endl;
		cout << "9h - 10h :  Graphic Bootstrap at room no. 1" << endl;
		cout << "10h - 11h : KickOff Pool C  room 1" << endl;
		cout << "11h- 13h: individual point with the pedago (1 student every 10 minutes) at room 2" << endl;
		break;

	case '2':
		cout << "You are Tek2 in second year your classes are as follows : " << endl;
		cout << "11h - 12h : Kickoff Arcade Room 2" << endl;
		cout << "12 h - 13 h : Kickoff Zia Room 2 " << endl;
		cout << "13h - 15h: Individual point with the pedago , 1 student every 10 minutes at Room 2" << endl;
		cout << "13h - 15h : If you  do not have presentation then you can use  the pc pool can be at Room 3" << endl;
		break;
	case '3':
		cout << "You are Tek3 in third year your classes are as follows : " << endl;
		cout << "11h-12h :  Kickoff Cryptography Project Room no. 1 " << endl;
		cout << "12hh- 13h : Update on the year with the pedago at Room 1 " << endl;
		cout << "11h- 13h :  Individual point with the pedago 1 student every 10 minutes at room 1" << endl;
		cout << "11h - 13h : If you  do not have presentation then you can use  the pc pool can be at Room 3" << endl;
		break;
```

```
        default:
                cout << " Congratulations you dont have any classes" << endl;
        }
        cout << "You are in year " << year << endl;

        return 0;
}
```

Executable solution:
****** To know your class schedule enter 1 for 1st year , 2 for second year and 3 for 3rd year *****
3
You are Tek3 in third year your classes are as follows :
11h-12h : Kickoff Cryptography Project Room no. 1
12hh- 13h : Update on the year with the pedago at Room 1
11h- 13h : Individual point with the pedago 1 student every 10 minutes at room 1
11h - 13h : If you do not have presentation then you can use the pc pool can be at Room 3
You are in year 3

// example selection for the 3rd year.

Thank you very much