Task 1

The system is designed to calculate taxes.
Employees whose salary is up to and including $4,000 do not pay tax. The next $1,500 is taxed at 10%.
The next $28,000 is taxed at 22%.

All subsequent amounts are taxed at 40%. Which of these groups of values will fall into the same equivalence class?

Decision:
We distinguish 4 classes of equivalence:
with 0% tax - up to and including $4,000
with 10% tax - from $4,000 to $5,500 inclusive
with 22% tax - from $5,500 to $33,500 inclusive
with 40% taxation - it is from $33,500 and above

Let's look at the answer options:
a) $4,800, $14,000, $28,000 group of values falls into two equivalence classes
b) 5200 $, 5500 $, 28000 $ group of values falls into two equivalence classes
c) $28001, $32000, $35000, the group of values falls into two equivalence classes
d) $5,800, $28,000, $32,000 group of values fall into one equivalence class

So, the correct answer is d)

Task 2
Bonuses for employees are calculated.
The value cannot be negative, but can be 0.
Bonuses are calculated depending on the period of work in the company.
Categories: term of employment is less than or equal to 2 years; more than 2 years, but less than 5 years; from 5 years or more, but less than 10 years; 10 years and more.
What is the minimum number of test cases needed to test all equivalence classes?

Decision:
It seems to me that no less than 4 cases are needed here:
1. No experience up to 2 years inclusive
2. More than 2 years but less than 5 years
3. 5 inclusive and up to 10 (not including 10)
4. 10 inclusive and more

Task 3

The video application has the following requirements:

The program must play the video on devices with the appropriate display sizes:

- **640x480**
- **1280x720**
- **1600x1200**
- **1920x1080**

Which of the proposed sets of test cases is the result of applying the equivalence class technique?
a) make sure that the program can play video on a 1920x1080 display (1 test)
b) make sure that the program can play video on 640x480 and 1920x1080 displays (2 tests)
c) make sure that the program can play video on displays of all specified sizes (4 tests)
d) make sure that the program can play video on a display of any size from the requirements (1 test)

Decision:
The application for working with video has specific requirements with specific values, so I believe that you need to conduct all 4 tests with each of the values. So, I choose an answer
c) make sure that the program can play video on displays of all specified sizes (4 tests)
But in the answer
d) make sure that the program can play video on a display of any size from the requirements (1 test)
it is stated that all checks can be carried out in 1 test. I don't really understand how this is technically possible, but if it is possible, then you can choose this option)))
And I'm not too sure that the two value boundary technique, where the maximum and minimum values are, will work here, because the display sizes can be more than 4)))

Task 4
The fitness application counts steps and gives the user feedback about his activity. The feedback for different number of steps should be as follows:
up to 1000 steps (inclusive) - "Lazy potato!"
more than 1000 to 2000 (inclusive) - "Try more!"
more than 2000 to 4000 (inclusive) - "Almost reached the goal!"
more than 4000 to 6000 (inclusive) - “A little more!”

more than 6000 - “You are cool!”

Determine equivalence classes and threshold values for achieving 100% coverage.
Decision:
1st class "Lazy potato!" : from 0 to 1000 steps (inclusive)
2nd class "Try more!" : from 1001 to 2000 steps (inclusive)
3rd class"Almost reached the goal! " from 2001 to 4000 steps (inclusive)
4th class "A little more! " from 4001 to 6000 steps (inclusive)
5th class "You are cool! " from 6001 and more

Task 5
You test software that checks homework and assigns grades.

Based on the number of points scored, grades can be as follows: 1-49=F, 50-59=E, 60-69=D, 70-79=C, 80-89=B, 90-100=A.

How many tests are needed to achieve 100% coverage using the cutoff technique?

Decision:

It seems to me that you need to make 1 test with the data for the test:

0, 1, 49, 50, 59, 60, 69, 70, 79, 80, 89, 90, 100, 101