SECTION C: SELECTION AND DECISION

1. Write a program **Letter** that asks the user to input a letter. The program should determine whether the letter entered is a capital letter or a small letter.

2. Create a program called **Marks** which asks the user to input three marks. The message *Passed* is displayed if all the marks entered are larger than 50. Otherwise the message *Failed* is displayed.

3. Create a class called **Grades** which asks the user to input a mark for a music theory exam which are graded out of 100. A student passes the exams with a score of 66 and gets a merit or distinction with marks of 80 and 90 respectively. The program should display the grade that the student obtained.

4. Create a class called **Parity** which asks the user to input a whole number. The program tells the user whether the number entered is odd or even.

5. Create a class called **Lock** which mimics the operation of a combination lock. The lock will only open if its dial is moved to the three numbers of the combination in the correct order. The combination that the lock opens to is 27-18-54.

6. Create a class called **Largest** which asks the user to input three numbers and finds the largest number from them.

7. Create a class called **LogIn** which asks the user to input his username and password. The program displays a welcome message only if both the username and the password are correct. Suppose that the username is *atanti* and the password is *hfhQEYU88!*

8. Create a class called **Quadratic** which asks the user to input three numbers to find the roots of a quadratic equation by using the formula $\frac{-b\pm\sqrt{b^2-4ac}}{4a}$. The number of roots that a particular formula has must be stated by the program.

9. Write a program called **Letters** which receives a letter as input from the user. The program checks whether the letter is a vowel or a consonant or an invalid entry.

10. Write a program **MarkGrade** that asks the user to input three marks between 1 and 100. The average of these marks is then found which acts as the final mark. The program must tell the user what grade the final mark means. Use the following criteria:

Mark Range	0-49	50-65	66-79	80-89	90-100
Grade	F	D	C	B	A

11. Write a program **Generation** that accepts the year a person was born as input. The program should determine the generation that that person belongs to. Use the following table as a guide.

Generation Name	Range
Silent Generation	1925-1945
Baby Boom Generation	1946-1964
Generation X	1965-1980
Millennials	1981-1994
Gen Z	1995-2012
Gen Alpha	2013-2025

12. Create a class called **Cinema** which asks the user to input his age. If the user is over 16 years old, the program will ask for the quantity of tickets needed for adults and children. Tickets are priced at €6 and €3.50 each for adults and children respectively. A special offer is reducing tickets to €5 each for adults if the user buys 2 or more children tickets. The total is then shown.

13. Write a program called **TaxRate** that asks the user to input his status and yearly income. S means single while M means married. Use the following table as criteria for calculating and displaying the appropriate tax to be paid.

Single				
From	0	8,501	14,501	60,001
To	8,500	14,500	60,000	And over
Rate	0%	15%	25%	35%
Married				
From	0	11,901	21,201	60,001
To	11,900	21,200	60,000	And over
Rate	0%	15%	25%	35%

14. Write a program called **Seasons** which asks the user to input a month number. The season in which that month is found in is then displayed. Assume the following.

Season	Months
Winter	December, January, February
Spring	March, April, May
Summer	June, July, August
Autumn	September, October, November

15. Write a program called **Conversion** which asks the user to choose from the following options:

    1. Pounds to grams
    2. Grams to pounds

    The program should be able to do the above conversions by asking the user to input the original amount to be converted and then display the equivalent in the other unit of measurement. 1 pound is equivalent to 453.59 grams. Include a quit option.

16. Write a program called **Days** which asks the user to input a month number. The program then displays how many days that particular month has. Use the switch statement.

17. Write a program called **Calculator** which asks the user to input two numbers and then choose from the following options:

    1. Addition
    2. Subtraction

    For option 2 always subtract the smallest number from the largest number. Include a quit option.

18. Write a program **Quiz** that asks the user the following multiple choice question:

    What is the name of the largest country in the world?

    a. China
    b. Australia
    c. Russia
    d. Canada

    The user must input a, b, c or d and the program should tell the user whether a correct guess was made or not. The correct answer is c.