# Conditional statements

### Level 1 `if`

1. Complete the following sample of code given the statement below and print a message when the condition is met:

   *If the temperature is below zero, display it's freezing.*

   ```
   temperature = 3.0
   ```

2. Complete the following sample of code given the statement below and print a message when the condition is met:

   *Display "you are eligible for a scholarship" if the age of a person is between 18 and 25 (inclusive)*

   ```
   age = int(input("What is your age?"))
   ```

3. Complete the following sample of code given the statement below and print a message when the condition is met:

   *Display "Successful login"  if the password is  "L0ngP@33w0rd34512"*

   ```
   password = "easypassword123"
   ```

   > Note: This is not how program really authenticate a user. This would be a major vulnerability! Most programs store the hashed version of the password.

4. Complete the following sample of code given the statement below and print a message when the condition is met:

   *I will go to school if the bus has arrived*

   ```
   bus_arrived = True
   ```

5. Complete the following sample of code given the statement below and print a message when the condition is met:

*Ensure that the the percentage of increase entered by the user is between -100.0 and +100.0. If it's the case calculate the increase amount*

```
stock_value = 100_000
increase = float(input("What is the percent increase this year (in %)? "))
increase_amount = ...
```

6. Translate the following lines of code:

```
r_score = 35
if r_score >= 30:
    print("You are eligible for the scholarship.")
```

7. Translate the following lines of code:

```
temperature = 12.0

if 0 <= temperature < 16:
    print("It is chill outside.")
```

8. Trace the output of this program:

```
day=1
raining_outside = False
temperature =14.5
humidity = 0.80

day+=1
temperature -=3
humidity += 0.1

day+=1
temperature -=2
humidity += 0.1

if humidity> 0.7 and temperature <=12.0:
    raining_outside = True

day+=1
temperature -= 2
humidity/= 2
```

```
if raining_outside and humidity < 0.7:
    raining_outside = False
    temperature+=2.0


print("The temperature is", temperature )

print("The humidity is", humidity)

print("Is it raining outside?", raining_outside)
```

**Level 2** `if/else` and logical operators `and`, `or`, `not`

1. Complete the following sample of code given the statement below and print a message when the condition is met and another message if it's not met:

   *Display "Successful login"  if the password is  "L0ngP@33w0rd34512", and "Incorrect Login" if the password is incorrect*

```
password = "easypassword123"
```

2. Complete the following sample of code given the statement below and print a message when the condition is met and another message if it's not met:

   *Display "The store is open" if the current hour is between 8 and 17, otherwise display the store is closed*:

```
current_hour = 21
```

3. Write a program which orders two numbers entered by the user in ascending order:

```
num1 = int(input("Enter the first number"))
num2 = int(input("Enter the second number"))
```

4. Write a program which displays "You get an upgrade to business class" if the number of trips exceeded 5 and the user has a membership:

```
membership=True
num_trips = 7
```

4. Translate the following python code to English:

```
salary= 60_000
paygrade = 4
level = 5
if paygrade == 7:
    if 0 <= level <= 8:
        salary *= 1.05
    else:
        salary *= 1.04
else:
    salary *= 1.06

print("Your salary is", salary)
```

5. Translate the following python code to English:

```
num_candies = int(input("How many candies do you have?"))
num_students = int(input("What is the number of students?"))
if num_students != 0 :
    print("That is on average ", num_candies/num_students, " candies/ student")
else:
    print("Sorry you can't divide the candies by 0 students. Try again.")
```

6. Write a program which displays "Change your car oil" if the user has enough money (needs 80$) **and** if one of these two conditions apply: they reached 5000km **or** it's been more than 3 months since the last oil change:

```
saving = 50.0
mileage = 3500
months = 6
```

7. Write a program which displays "You are eligible to vote." if the user is a citizen and if their age is above or equal to 18. Otherwise display "You can't vote."

```
age = 22
is_citizen = True
```

8. Write a program which displays "You can go camping this weekend" if the camping site is available, if it's not raining and they have access to a car:

```
camping_available = True
is_raining = False
has_car = True
```

9. Write a program which asks the user for their birth year, month and day and calculates their exact age in years.

**Level 3** `if/elif/else` and nested conditions

1. Write a program which asks the user for the temperature. The program prints a different message for each of the following condition:

   *If the temperature is:*

   - above 25: *it's hot outside*
   - below 25 but above 15: *it's pretty warm outside*
   - below 15 but above 0: *it's pretty chill outside*.
   - below zero: *it's freezing outside*

2. Write a program which asks the user for three numbers and prints them in ascending order:

```
num1 = int(input("Enter the first number"))
num2 = int(input("Enter the second number"))
num3 = int(input("Enter the third number"))
```

3. Write a program which asks the birth year of the user and prints "even year" if the birth year is an odd number, otherwise prints "odd year"
4. Write a program which asks the user of their name, age, height and validates:
   - Their name is not an empty string
   - Their age is a numeric value (hint: use `isnumeric()` to validate the number)
   - Their height is a numeric value **and** is between 0.0 and 9.0, prints "The height seems too small", if the value is smaller than the range, and prints "The height seems to big" otherwise.

**Optional exercises**

Write a program which provides the user with the following options and waits for an answer. Use `match/case` instead of `if/else`:

```
Select any of the following options:
1 Start new game
2 Load new game
3 View highest score
4 Change settings
5 Exit
```

The program must print the option chosen by the user and if no valid option was given, print "Invalid selection".

> The game menu above was generated by Chat Gpt

Write the greeting message of program based on the selection of the user, the following message should be printed when the user inputs the associated selection. Use `match/case`:

- `fr`: "Bonjour!"
- `eng`: "Hi!"
- `esp`: "Hola!"
- `ger`: "Guten Tag!"
- `ita`: "Ciao"
- `man`: "你好 (Nǐ hǎo)"
- `jap`: "こんにちは (Konnichiwa)"

**Answers:**

**Level 1**

1. ```
   if temperature < 0.0:
       print("It's freezing outside")
   ```

2. ```
   age = int(input("What is your age?"))

   if 18 <= age <= 25:
       print("You are eligible for a scholarship")
   ```

3. ```
   password = "easypassword123"

   if password == "LOngP@33wOrd34512":
       print("Correct password!")
   ```

4. ```
   bus_arrived = True
   if bus_arrived:
       print("I will go to school")
   ```

5. ```
   stock_value = 100_000
   increase = float(input("What is the percent increase this year (in %)? "))
   increase_amount = 0
   if -100 <= increase <=100:
       increase_amount = stock_value * (increase/100)
   ```

6. If the person's r -score is above 30, a message saying "You are eligible for a scholarship" is displayed.
   ```

7. Display "it's pretty chill outside" if the temperature between 0 and 16°?

8. The temperature is 9.5
   The humidity is 0.5
   Is it raining outside? False

**Level 2**

1. 
```
password = "easypassword123"

if password == "LOngP@33wOrd34512":
    "Successful login"
else:
    "Incorrect Login"
```

2. 
```
current_hour = 21
if 8 <= current_hour <= 17:
    print("The store is open")
```

3. 
```
num1 = int(input("Enter the first number"))
num2 = int(input("Enter the second number"))

if num1 < num2:
    print(num1, num2)
else:
    print(num2, num1)
```

4. 
```
membership=True
num_trips = 7

if membership and (num_trips > 5):
    print("You get an upgrade to business class")
```

5. If a person's paygrade is anything but 7, they get a 6% bonus on their salary. If it is 7, they get a 5% bonus if the level is between 0 and 8, otherwise they get a 4% bonus.

6. The program asks the user for the number of candies and the number of students then calculates the average number of candies per student only if the number of student is not 0, to avoid a division by zero and a math error.

```
saving = 50.0
mileage = 3500
months = 6

if (saving > 80.0) and ((mileage >= 5000) or (months >= 3)):
    print("Change your car oil")
```

7.
```
age = 22
is_citizen = True

if age >= 18 and is_citizen:
    print("You are eligible to vote")
else:
    print("You can't vote")
```

8.
```
camping_available = True
is_raining = False
has_car = True

if camping_available and not is_raining and has_car:
    print("You can go camping this weekend")
```

9.
```
import datetime

current_year = datetime.datetime.now().year
current_month = datetime.datetime.now().month
current_day = datetime.datetime.now().day

year_birth = int(input("Please enter your year of birth (YYYY): "))
month_birth = int(input("Please enter your month of birth (1-12): "))
day_birth = int(input("Please enter your day of birth (1-31): "))

age = current_year - year_birth

if  current_month < month_birth :
    age -= 1

if (current_month == month_birth) and (current_day < day_birth):
    age-=1

print(age)
```

1.
```
temperature = float(input("Please enter the temperature: "))

if temperature >= 25.0:
    print("It's hot outside")
elif temperature >= 15.0:
    print("It's pretty warm outside")
elif temperature >= 0.0:
    print("It's chill outside")
else:
    print("It's freezing outside")
```

2. Multiple answers possible:

```
num1 = int(input("Enter the first number"))
num2 = int(input("Enter the second number"))
num3 = int(input("Enter the third number"))

if num1 < num2:
    if num2 < num3:
        print(num1, num2, num3)
    elif num1 < num3:
        print(num1, num3, num2)
    else:
        print(num3, num1, num2)
elif num1 < num3:
    print(num2, num1, num3)
elif num2 < num3:
    print(num2, num3, num1)
else:
    print(num3, num2, num1)
```

Other possible answer:

```
num1 = int(input("Enter the first number"))
num2 = int(input("Enter the second number"))
num3 = int(input("Enter the third number"))

if num1 < num2 and num2 < num3:
    print(num1, num2, num3)
elif num1 < num2 and num3 < num2:
    print(num1, num3, num2)
elif num2 < num1 and num1 < num3:
    print(num2, num1, num3)
elif num2 < num1 and num3 < num1:
    print(num2, num3, num1)
```

```
elif num3 < num2 and num2 < num1:
    print(num3, num2, num1)
else:
    print(num3,num1,num2)
```

3.
```
birth_year= int(input("Enter year of birth: "))
if birth_year % 2 == 0:
    print("Even year")
else:
    print("Odd year")
```

4.
```
name = input("Enter your name: ")
if not name:
    print("Name cannot be empty.")
    exit()

# Ask for age and validate it is numeric
age_str = input("Enter your age: ")
if not age_str.isnumeric():
    print("Age must be a number and must be positive")
    exit()
age = int(age_str)
# Ask for height and validate it is numeric and within range
height_str = input("Enter your height (in meters): ")

if not height_str.lstrip('-+').isnumeric():
    print("The height must a number.")
    exit()

height = float(height_str)
if height < 0.0:
    print("The height seems too small.")
elif height > 9.0:
    print("The height seems too big.")
else:
    print(f"Name: {name}, Age: {age}, Height: {height_value} meters")
```

Match case :

```
print("Select any of the following options: ")
print("1 Start new game")
print("2 Load new game")
print("3 View highest score")
print("4 Change settings")
```

```
print("5 Exit")
user_choice = input()

match user_choice:
    case "1":
        print("Starting new game...")
    case "2":
        print("Loading game...")
    case "3":
        print("Loading highest score...")
    case "4":
        print("Changing settings...")
    case "5":
        print("Exitting...")
        exit()
    case _:
        print("Invalid option")
        exit()
```

```
print("Language selection: ")
print("fr - French")
print("eng - English")
print("esp - Spanish")
print("ger - German")
print("ita - Italian")
print("man - Mandarin")
print("jap - Japanese")
user_choice = input()

match user_choice:
    case "fr":
        print("Bonjour!")
    case "eng":
        print("Hi!")
    case "esp":
        print("Hola!")
    case "ger":
        print("Guten Tag!")
    case "ita":
        print("Ciao")
    case "man":
        print("你好 Nǐ hǎo")
    case "jap":
        print("こんにちは Konnichiwa")
    case _:
        print("Invalid option")
        exit()
```