

# Programming

Lab Sessions



# Assignment I - Presentations

- Zoom room for presentations:  
Meeting ID: 641 7002 9853  
Passcode: 034035
- Group order for presentation available at
- **Be on time**
- Martin will be available to solve doubts at the usual meeting room with an exercise list.

# Example

- Let's write a program that prints the sum of all even number between two values specified by the user.

# Example

```
# Program that sums all even numbers within a range
specified by the user

# Get user input
start = int(input('Please input the start of the range: '))
end = int(input('Please input the end of the range: '))

# For loop summing all values that are even
sum = 0
for value in range(start, end+1):
    if value%2 == 0:
        sum = sum+value

# Print result
print(sum)
```

# Questions?

# Continue and Break

- **continue**
  - Tells python to treat the loop execution as complete and move to on to the next
- **break**
  - Tells python to stop the execution of the loop entirely and move on to the next part of the code
- Works on for and while loops

```
for value in range(start, end+1):  
    if value == 6:  
        continue  
    if value%2 == 0:  
        sum = sum+value
```

Will not include 6 in the sum

```
x = 0  
while x < 10:  
    if(x==6):  
        break  
    print(x)  
    x = x + 1
```

Will stop the loop when x=6

# Example

- Let's write that asks the user to input 10 number. He can decide to quit by inputting 0. The program prints the sum of all odd numbers he entered that were different from 9.

# Example

#Program that calculates the sum of odd numbers entered by user until he decides to quit

#declare the sum

sum = 0

**for** number **in** range(10):

value = int(input('Please type a number, type 0 to quit: '))

#if value is 0, break from the loop

**if** value == 0:

**break**

#If value is 9, do nothing and return to start of loop

**if** value == 9:

**continue**

#Else, If value is odd, sum it

**elif** value%2 != 0:

sum = sum + value

#Print the sum

**print**('The sum of odd numbers different from 9 is:', sum)

# Questions?

# Example

- Caffeine is the most widely used psychoactive substance in the world. General safe usage of caffeine is around 400mg per day, with risk groups (diabetes, pregnant, slow metabolizers) being only 200mg. Caffeine overdoses can have serious consequences, even leading to death, with 51 caffeine-related deaths per year. The general lethal dose of caffeine is 150mg per kg of body weight, with half that for risk groups.
- Let's write a program where the user can input his weight, if he is part of a risk group or not, as the number of caffeinated drinks he has consumed. The program must warn him if he is over the safe limit, and if he is overdosing and should go to the hospital.

# Example

Drink	Caffeine Content
Espresso	125mg
Instant/Brewed Coffee	300mg
Coke	75mg
Redbull	80mg
Monster	160mg
Pre-workout	350mg
Fat burner	300mg
High Voltage Coffee	1550mg

```
#Safe limits for caffeine
```

```
safe = 400
```

```
#Get user weight
```

```
weight = float(input('Please enter you weight in kg: '))
```

```
#Lethal dose for the given weight
```

```
lethal = 150*weight
```

```
#Get if user is part of a risk group and correct dosages
```

```
risk = input('Are you part of a risk group (diabetes, pregnant, slow metabolizer)? yes or no')
```

```
if risk == 'yes':
```

```
    lethal = lethal/2
```

```
    safe = safe/2
```

```
#Total quantity of caffein
```

```
total = 0
```

```
#User inputs drinks and quantity
```

```
while True:
```

```
    print('Please select a drink:')
```

```
    print('[1] Espresso')
```

```
    print('[2] Instant/Brewed')
```

```
    print('[3] Coke')
```

```
    print('[4] Redbull')
```

```
    print('[5] Monster')
```

```
    print('[6] Pre-workout')
```

```
    print('[7] Fatburner')
```

```
    print('[8] High Voltage Coffee')
```

```
    print('[0] End')
```

```
    choice = int(input('=>'))
```

```
if choice == 0:
```

```
    break
```

```
quantity = int(input('Please enter how many cups/doses/cans: '))
```

```
if choice == 1:  
    total = total + (quantity * 125)  
elif choice == 2:  
    total = total + (quantity * 300)  
elif choice == 3:  
    total = total + (quantity * 75)  
elif choice == 4:  
    total = total + (quantity * 80)  
elif choice == 5:  
    total = total + (quantity * 160)  
elif choice == 6:  
    total = total + (quantity * 350)  
elif choice == 7:  
    total = total + (quantity * 300)  
elif choice == 8:  
    total = total + (quantity * 1550)  
else:  
    continue  
  
if total > lethal:  
    print('#####')  
    print('You should go to the hospital')  
    print('#####')  
elif total > safe:  
    print('#####')  
    print('You are already over the safe dosage')  
    print('#####')  
  
print('You have consumed', total, 'mg of caffeine')
```

# Exercise

- Write a program for controlling a bank account where the user has both a checking and savings account. The user should be able to deposit into either account, withdraw from either account, and transfer from one account to the other. When withdrawing and transferring, check if the user has enough balance for the requested operation. After a successful operation, the program must print the balance of the account to the user. Assume any initial value you want for both user accounts. Tip: your options and outputs should look like this:

```
Please select an option
[1] Withdrawn from checking
[2] Withdrawn from savings
[3] Deposit in checking
[4] Deposit in savings
[5] Transfer from checking to savings
[6] Transfer from savings to checking
[0] Exit
```

```
=> 3
Please enter the value: 500
You have 500 SEK left in your checking account
You have 2500 SEK in your savings account
```

# Exercise

```
#Initial value for both accounts
```

```
checking = 1000
```

```
savings = 2000
```

```
while True:
```

```
    #Ask user for input
```

```
    print('Please select an option')
```

```
    print('[1] Withdrawn from checking')
```

```
    print('[2] Withdrawn from savings')
```

```
    print('[3] Deposit in checking')
```

```
    print('[4] Deposit in savings')
```

```
    print('[5] Transfer from checking to savings')
```

```
    print('[6] Transfer from savings to checking')
```

```
    print('[0] Exit')
```

```
    choice = int(input('=> '))
```

```
    #Exit if 0
```

```
    if choice == 0:
```

```
        break
```

```
    #Get the value for the operation
```

```
    value = int(input('Please enter the value: '))
```

# Exercise

#Withdraws, check if there is balance first

```
if choice == 1:
    if value > checking:
        print('You have insufficient funds')
    else:
        checking = checking - value
        print('You have', checking, 'SEK left in your checking account')
if choice == 2:
    if value > savings:
        print('You have insufficient funds')
    else:
        savings = savings - value
        print('You have', savings, 'SEK left in your checking account')
```

#Deposits, no need to check balance first

```
if choice == 3:
    checking = checking + value
    print('You now have', checking, 'SEK in your checking account')
if choice == 4:
    savings = savings + value
    print('You now have', savings, 'SEK in your savings account')
```

#Transfer, must check balance from the account that is the source of the funds

```
if choice == 5:
    if value > checking:
        print('You have insufficient funds')
    else:
        checking = checking - value
        savings = savings + value
        print('You have', checking, 'SEK left in your checking account')
        print('You have', savings, 'SEK in your savings account')
if choice == 6:
    if value > savings:
        print('You have insufficient funds')
    else:
        checking = checking + value
        savings = savings - value
        print('You have', savings, 'SEK left in your savings account')
        print('You have', checking, 'SEK in your checking account')
```

# Exercise

- A restaurant has a menu according to the following table. Write a program that reads the code of the items and the quantity bought. Calculate and print the value per item (quantity\*price) and the total price of the bill with all items included.

Item	Code	Price
Kebabtallrik	100	100 kr
Pizzor klass I	101	60 kr
Pizzor klass II	102	85 kr
Pizzor klass III	103	95 kr
Hamburgertallrik	104	80 kr
Drycker	105	15 kr

# Exercise

#Initialize number of items on the order

```
kebab = 0
klass_1 = 0
klass_2 = 0
klass_3 = 0
hamburger = 0
drycker = 0
total = 0
```

#Ask user to input order and control input for possible errors

**while True:**

```
    print('Please select an item: ')
    print('[100] Kebabtallrik - 100 kr')
    print('[101] Pizza Klass 1 - 60 kr')
    print('[102] Pizza Klass 2 - 85 kr')
    print('[103] Pizza Klass 3 - 95 kr')
    print('[104] Hamburgertallrik - 80 kr')
    print('[105] Drycker - 15 kr')
    print('[999] to finish order')
    choice = int(input('=> '))
```

**if choice == 999:**

```
    break
```

**elif choice < 100 or choice > 105:**

```
    print('Please enter a valid code.')
    continue
```

```
number = int(input('Please enter number of items: '))
```

**if choice == 100:**

```
    kebab = kebab + number
```

**if choice == 101:**

```
    klass_1 = klass_1 + number
```

**if choice == 102:**

```
    klass_2 = klass_2 + number
```

**if choice == 103:**

```
    klass_3 = klass_3 + number
```

**if choice == 104:**

```
    hamburger = hamburger + number
```

**if choice == 105:**

```
    drycker = drycker + number
```

# Exercise

#Print the detailed bill, print only items that were ordered

```
print('Detailed bill')
if kebab > 0:
    print('Kebabtallrik - ', kebab, '-', kebab*100)
    total = total + kebab*100
if klass_1 > 0:
    print('Klass 1 - ', klass_1, '-', klass_1*65)
    total = total + klass_1*65
if klass_2 > 0:
    print('Klass 2 - ', klass_2, '-', klass_2*85)
    total = total + klass_2*85
if klass_3 > 0:
    print('Klass 3 - ', klass_3, '-', klass_3*95)
    total = total + klass_3*95
if hamburger > 0:
    print('Hamburger - ', hamburger, '-', hamburger * 95)
    total = total + hamburger * 95
if drycker > 0:
    print('Drycker - ', drycker, '-', drycker * 95)
    total = total + drycker * 95

print('Grand Total - ', total)
```

# Fin