

Recitation 1 for AF3214

Semester 2, 2024/25

Problem 1: Single path of execution

```
##### Input #####

amount = float(input ('Amount? '))
rate = float(input ('Interest rate? '))

# Notes: The Python float() method converts a number stored in a
# string or integer into a floating point number,
# or a number with a decimal point.

##### Input #####

##### Process #####

interest = amount * rate

##### Process #####

##### output #####

print ('The annual interest is: ', interest)

##### output #####
```

Problem 2: Divergent path of execution (if-then-else)

```
##### Input #####

amount = float(input ('Amount? '))
rate = float(input ('Interest rate? '))
interestType = input ('annual or monthly or daily? ')

##### Input #####
```

```

##### Process #####

if interestType == 'annual':
    interest = amount * rate
elif interestType == 'monthly':
    interest = amount * rate / 12
elif interestType == 'daily':
    interest = amount * rate / 360
else:
    print("Please enter the correct word.")

##### Process #####

##### output #####

print ('The', interestType, 'interest is: ', interest)

##### output #####

```

Problem 3: Divergent path of execution nested (if-then-else)

```

##### Input #####

amount = float(input ('Amount? '))
rate = float(input ('Interest rate? '))
interestType = input ('annual, quarterly, or monthly? ')

##### Input #####

##### Process #####

if interestType == 'annual':
    interest = amount * rate
else:
    if interestType == "quarterly":
        interest = amount* rate /4
    elif interestType = "monthly":
        interest = amount *rate / 12

##### Process #####

```

```
##### output #####

print ('The', interestType, 'interest is: ', interest)

##### output #####
```

Problem 4: Loop with known number of repetitions (for)

```
# Initiate accumulator

total_interest=0

##### Input #####

limit = int(input("How many notes receivable? "))

# Notes: The int() method returns an integer object from any number or
string.

for something in range (0, limit+1): # range() function returns a
sequence of numbers, in a given range.
https://www.geeksforgeeks.org/python-range-function/

    amount = float(input ('Amount? '))
    rate = float(input ('Interest rate? '))

    ##### Input #####

    ##### Process #####

    interest = amount * rate

    # Updating the accumulator

    total_interest = total_interest + interest

    # output

    print ('The annual interest is: ', interest)

    ##### Process #####

##### output #####
```

```
print ('Total interest is: ',total_interest)

##### output #####
```

Problem 5: Loop with unknown number of repetitions (while)

```
# Initiate accumulator and flag

total_interest=0
flag = "n"

while flag == "y":

    ##### Input #####

    amount = float(input ('Amount? '))
    rate = float(input ('Interest rate? '))

    ##### Input #####

    ##### Process #####

    interest = amount * rate

    # update accumulator

    total_interest = total_interest + interest

    ##### Process #####

    ##### output #####

    print ('The annual interest is: ', interest)

    ##### output #####

    # input

    flag = input("Another note receivable? yes[y] or no[n] ")

#print ('Total interest is: ',total_interest)
```

Problem 6: Working with files

```
# Initialization of accumulators

total_amount = 0
total_interest = 0
counter = 0

rate = float (input ('Rate? '))

amountFileHandler = open (r"amount.txt",'r')

# Raw string notation (r"text") keeps regular expressions sane.
# Without it, every backslash ('\') in a regular expression would have
# to be prefixed with another one to escape it.
# See https://docs.python.org/3.3/library/re.html#raw-string-notation

print (amountFileHandler)

for line in amountFileHandler:
    amount =float (line)
    interest = amount * rate
    print ('Amount: ', amount,',', interest: ',interest)
    counter += 1
    total_amount += amount
    total_interest += interest

amountFileHandler.close()

print ('Total notes: ', counter)
print ('Total amount: ', total_amount)
print ('Total interest: ', total_interest)
```