

Assignment 2

General Instructions: Save all the files to a directory named "<group-number>_as2", e.g. 23_as2. Compress this directory to a zip file and submit it via Blackboard (on the same place where you have downloaded the assignment. Comment the code well in a clear manner and choose clear names for your variables and parameters. The assignment must be presented Tuesday, 24/11. The deadline for turning in the assignment is 23/11 at 23:59:59.

1 factorial.py

Write a program where the user can input a number, the program will print the factorial of the inputted number. (Do not use functions from any module to calculate it)

2 prime.py

Write a program where the user can input a number, the program must print if the number is prime or not.

3 pi.py

An approximate value of π can be calculated as

$$4 \sum_{n=0}^N \frac{(-1)^n}{2n+1} = 4 \left(1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \dots \right)$$

Write a program that calculates the approximate value of π for a given N number of terms defined by the user.

4 perfect.py

Write a program where the user can input a number, the program must verify if the number is a perfect number. A number is perfect if the sum of its positive divisors (excluding itself) is equal to it. Example: 6 is a perfect number, since $6 = 1 + 2 + 3$.

5 `vote_drink.py`

Write a program where the user can input the ages of multiple people, the program must ask the user if he wants to continue entering ages or not. The program must then print the number of people that can vote and the number of people that can drink. Consider the voting age is 18 years old and the drinking age is 21 years old.

6 `payment_plan.py`

Write a program where the user can input the price of a product and the payment plan. The program must print the value to be payed considering the payment plan chosen by the user.

- Cash payment: 10% discount
- Card payment: 5% discount
- 2 month payment plan: normal price
- 3 or more months payment plan: 20% interest