Selection assignments
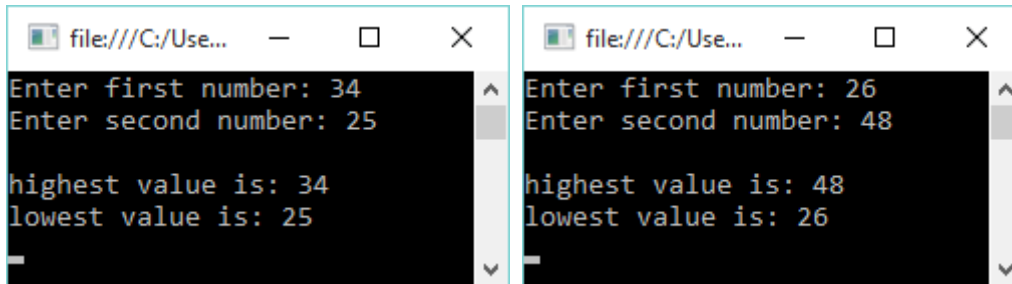
When creating the program code, you must apply the following basic principles:
- create a separate project for each assignment;
- create one solution for each week containing the projects for that week.

Assignment 1 (Console Application)
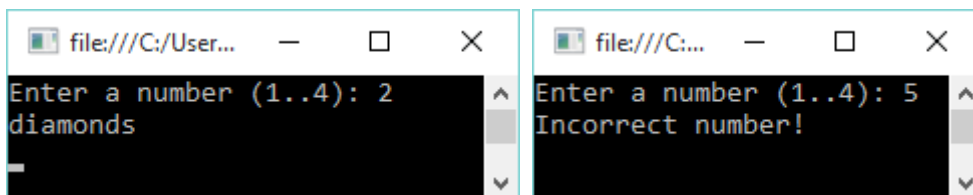Enter two numbers. Show the highest value ('highest value is: …') and show the lowest value ('lowest value is: …').

```
file:///C:/Use...  —  □  ×          file:///C:/Use...  —  □  ×

Enter first number: 34              Enter first number: 26
Enter second number: 25             Enter second number: 48

highest value is: 34                highest value is: 48
lowest value is: 25                 lowest value is: 26
```

Assignment 2 (Console Application)
Enter a number 1, 2, 3 or 4. Reject another value. Show the text 'clubs, 'diamonds', 'hearts' or 'spades' for 1, 2, 3 or 4 respectively. Use a switch statement (*so don't use if-else*).
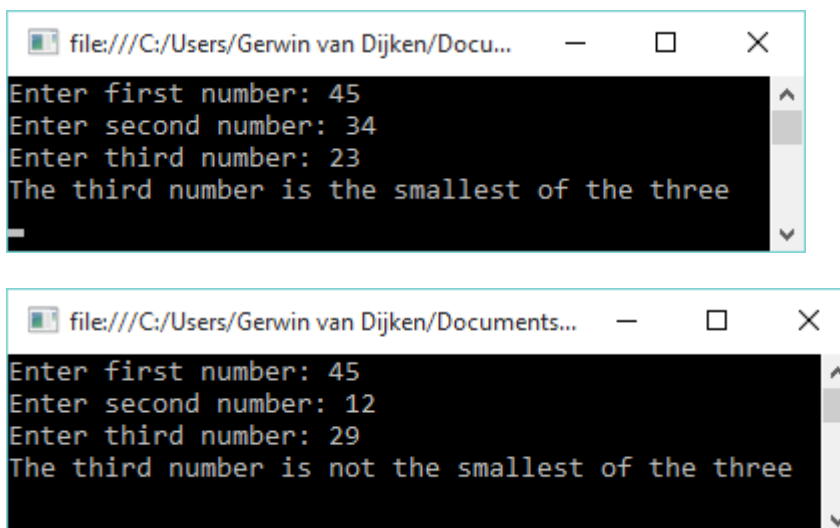
```
file:///C:/User...  —  □  ×          file:///C:...  —  □  ×

Enter a number (1..4): 2             Enter a number (1..4): 5
diamonds                             Incorrect number!
```

Assignment 3 (Console Application)
Enter three numbers. If the first two are both greater than the third, show 'The third number is the smallest of the three', otherwise show 'The third number is not the smallest of the three'.
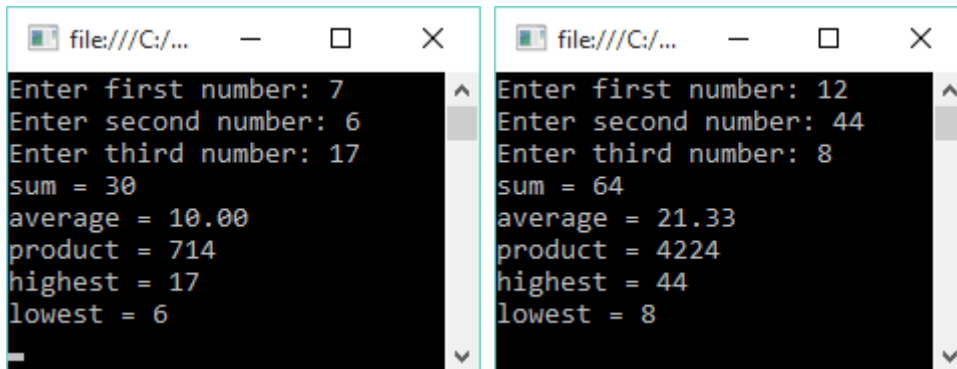
```
file:///C:/Users/Gerwin van Dijken/Docu...  —  □  ×

Enter first number: 45
Enter second number: 34
Enter third number: 23
The third number is the smallest of the three
```

```
file:///C:/Users/Gerwin van Dijken/Documents...  —  □  ×

Enter first number: 45
Enter second number: 12
Enter third number: 29
The third number is not the smallest of the three
```

Assignment 4 (Console Application)
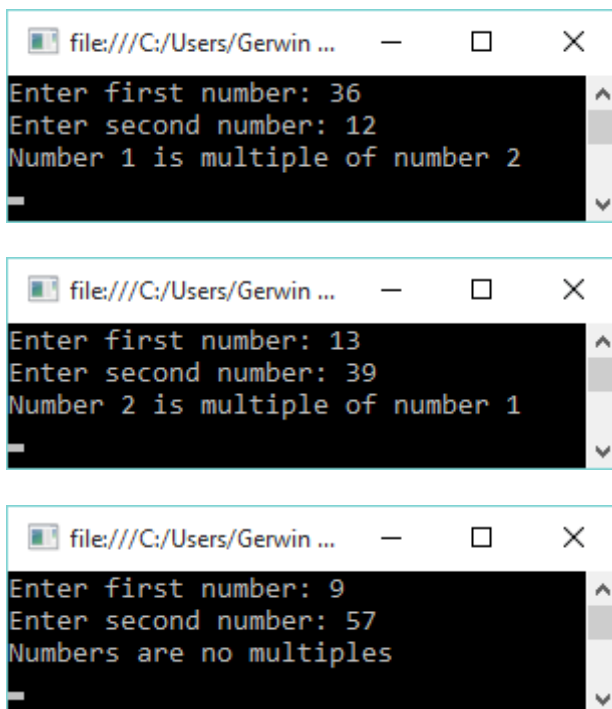Enter three numbers. Show the sum, average, product, highest and lowest of the numbers.

```
file:///C:/...    —    □    ×
Enter first number: 7
Enter second number: 6
Enter third number: 17
sum = 30
average = 10.00
product = 714
highest = 17
lowest = 6
```

```
file:///C:/...    —    □    ×
Enter first number: 12
Enter second number: 44
Enter third number: 8
sum = 64
average = 21.33
product = 4224
highest = 44
lowest = 8
```

Assignment 5 (Console Application)
Enter two numbers. Determine and show whether one number is a multiple of the other number.

```
file:///C:/Users/Gerwin ...    —    □    ×
Enter first number: 36
Enter second number: 12
Number 1 is multiple of number 2
```

```
file:///C:/Users/Gerwin ...    —    □    ×
Enter first number: 13
Enter second number: 39
Number 2 is multiple of number 1
```

```
file:///C:/Users/Gerwin ...    —    □    ×
Enter first number: 9
Enter second number: 57
Numbers are no multiples
```
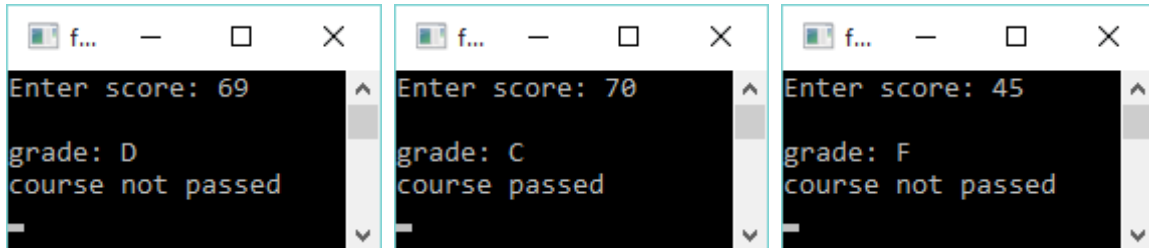
Assignment 6 (Console Application)
Letters such as A, B, C, D and F are used in the US education system.
- A = 90-100 points
- B = 80-89 points
- C = 70-79 points (or CR)
- D = 60-69 points
- F = fewer than 60 points

Grade 'A', 'B' and 'C' represents a pass and the student has successfully completed the course.
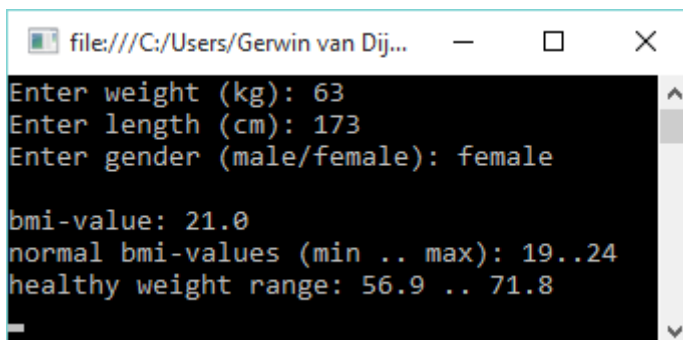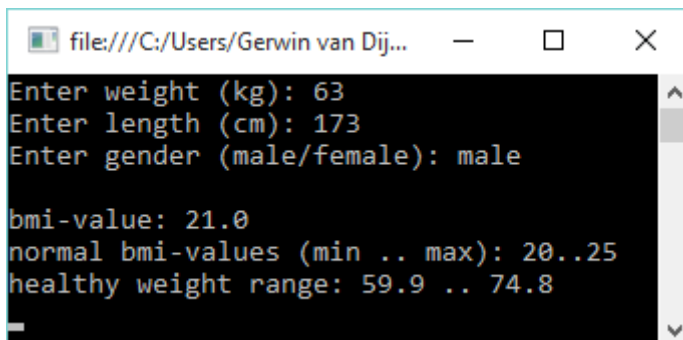Enter the score and state which letter a student will be given as output.
In addition, state whether or not the student has passed the subject.

```
f...    —    □    ×        f...    —    □    ×        f...    —    □    ×
Enter score: 69           Enter score: 70           Enter score: 45

grade: D                  grade: C                  grade: F
course not passed         course passed             course not passed
```

Assignment 7 (Console Application)
A dietitian consults tables on a daily basis indicating how much a male or a female of a certain height should weigh. The Body Mass Index (BMI) is recommended for measuring the amount of body fat. Because the BMI takes height into account, it is a more accurate measure of total body fat than body weight in itself.

- BMI = body weight (kg) / square of height (cm/100) (= $kg / (cm/100)^2$)
- Male: normal value 20 to 25, healthy weight between $20 \times (cm/100)^2$ and $25 \times (cm/100)^2$
- Female: normal value 19 to 24, healthy weight between $19 \times (cm/100)^2$ and $24 \times (cm/100)^2$

Enter the weight, length and gender. Then calculate and display the BMI. Also show the normal BMI values (for the gender entered), and show between which values the 'healthy' weight falls for the length stated.

```
file:///C:/Users/Gerwin van Dij...    —    □    ×
Enter weight (kg): 63
Enter length (cm): 173
Enter gender (male/female): male

bmi-value: 21.0
normal bmi-values (min .. max): 20..25
healthy weight range: 59.9 .. 74.8
```

```
file:///C:/Users/Gerwin van Dij...    —    □    ×
Enter weight (kg): 63
Enter length (cm): 173
Enter gender (male/female): female

bmi-value: 21.0
normal bmi-values (min .. max): 19..24
healthy weight range: 56.9 .. 71.8
```
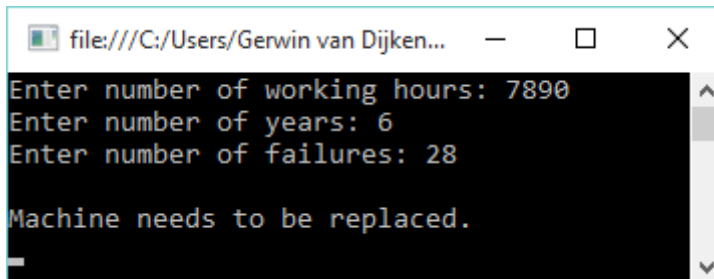
Assignment 8 (Console Application)
A metal turning lathe will be replaced by a new lathe at the end of the year if one or more of the following conditions have been met:
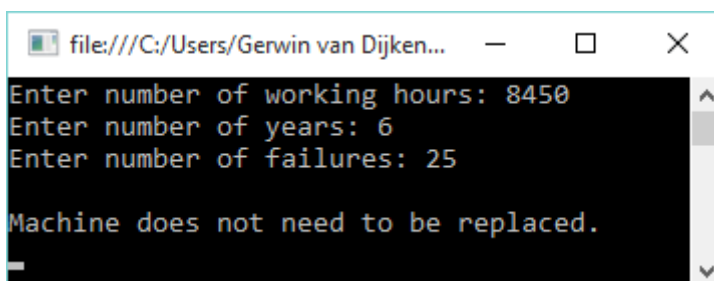- more than 10,000 working hours
- 7 years old or more
- more than 25 failures a year

Enter the necessary data. You must show whether the turning lathe needs to be replaced.

```
file:///C:/Users/Gerwin van Dijken...    —    □    ×
Enter number of working hours: 7890
Enter number of years: 6
Enter number of failures: 28

Machine needs to be replaced.
```

```
file:///C:/Users/Gerwin van Dijken...    —    □    ×
Enter number of working hours: 8450
Enter number of years: 6
Enter number of failures: 25

Machine does not need to be replaced.
```
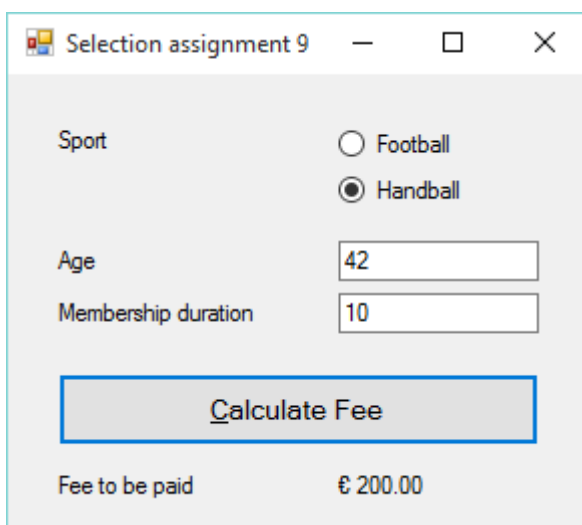
Assignment 9 (Windows Application)
The contribution fee for a sports association depends on the sport practised, the person's age and the number of years of membership. Situation:

- the membership fee for football is €175 and €225 for handball
- people over 40 receive €25 discount
- members who have been members for over 10 years receive €20 discount

Enter: type of sport (football or handball), age and membership duration.
Show the membership fee to be paid.

NB: Use radio buttons to determine the type of sport.
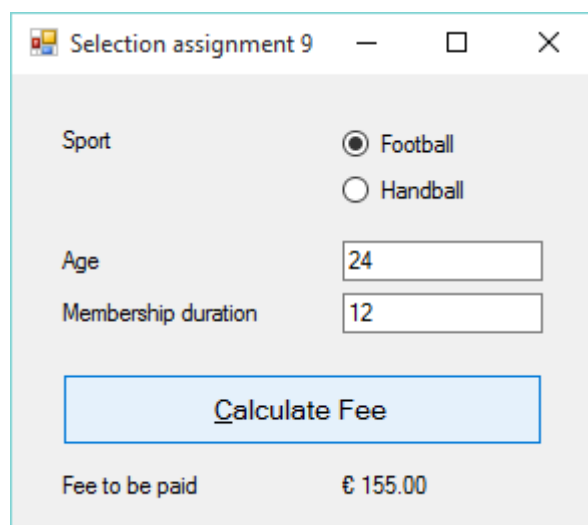
```
Selection assignment 9    —    □    ×

Sport              ○ Football
                   ● Handball

Age                42
Membership duration 10

       Calculate Fee

Fee to be paid     € 200.00
```

```
Selection assignment 9    —    □    ×

Sport              ● Football
                   ○ Handball

Age                24
Membership duration 12

       Calculate Fee

Fee to be paid     € 155.00
```

Assignment 10 (Windows Application)

A staff member receives a 5% raise on his/her monthly salary. However, the increase should amount to at least €75. Enter the current monthly salary. Calculate and print the increase and the new monthly salary.

Selection assignment 10	Selection assignment 10
Current monthly salary: 1400	Current monthly salary: 2100
Calculate raise	**Calculate raise**
Raise: € 75.00	Raise: € 105.00
New monthly salary: € 1475.00	New monthly salary: € 2205.00

Assignment 11 (Windows Application)

Enter two numbers. Calculate and show the average value.
Show the difference between the highest number and the average value.

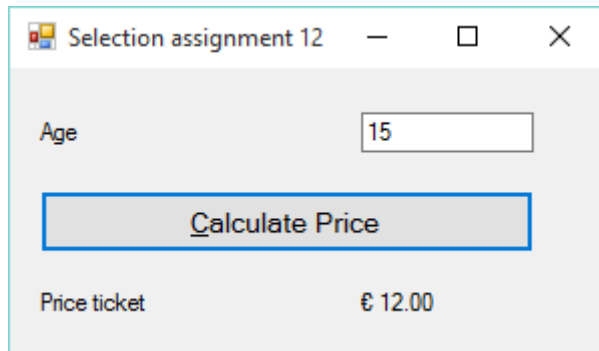| Selection assignment 11	Selection assignment 11
Number 1: 11	Number 1: 6
Number 2: 22	Number 2: 22
Calculate	**Calculate**
Highest number: 22	Highest number: 22
Average: 16.5	Average: 14
Difference: 5.5	Difference: 8

Assignment 12 (Windows Application)
Calculate the price of a cinema ticket as follows:
- the basic price is €12 (make it a constant value).
- enter the age.
- under 5 years: free
- from 5 to 12 years: half price
- from 13 to 54 years: full price
- from 55 years: free
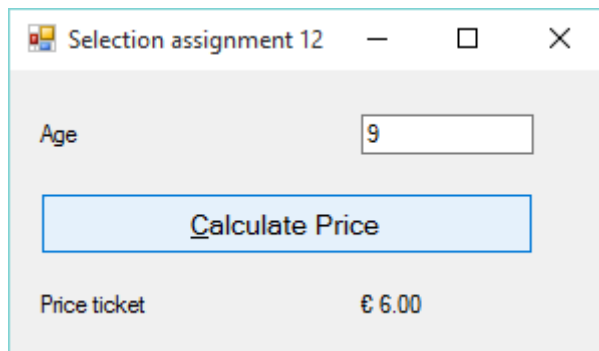
Show the price of a cinema ticket.

Selection assignment 12	—	□	×

Age   15

Calculate Price

Price ticket   € 12.00

Selection assignment 12	—	□	×

Age   9

Calculate Price

Price ticket   € 6.00

Assignment 13 (Windows Application)
Create a program that calculates the costs of renting a car.
Use the following cost information:
- rental rate per day: €55
- 100 km per day is included in the rental price; each additional kilometre costs €0.25
- the car should be returned with a full tank, this may sometimes be for account of the renter, €2.20 per litre of fuel.

You therefore need to enter the following data:
- number of rental days
- total number of kilometres driven
- litres refuelled upon return
- whether the petrol tank was filled up for account of the renter

Calculate the rental price to be paid and print it on the screen.

NB: Use a checkbox to determine whether the car has been refuelled for account of the renter (you can determine whether a checkbox has been checked with: this.<naam_checkbox>.Checked).

Selection assignment 13	— □ ✕
Number of rental days	5
Number of kms	600
☑ Refuel on account of renter	
Number of litres tanked	50
Calculate Rental Price	
Rental price	€ 410.00

Selection assignment 13	— □ ✕
Number of rental days	4
Number of kms	350
☐ Refuel on account of renter	
Number of litres tanked	15
Calculate Rental Price	
Rental price	€ 220.00

Assignment 14 (Windows Application)

Carry out the assignment on the Body Mass Index (BMI) once again, but now using the Windows Application which looks as follows:

Selection assignment 14	Selection assignment 14
Input	**Input**
Length (cm) 198	Length (cm) 198
Weight (kg) 95	Weight (kg) 95
Output	**Output**
BMI 24.2	BMI 24.2
Normal BMI values 20 .. 25	Normal BMI values 19 .. 24
Healthy weight 78.4 .. 98.0	Healthy weight 74.5 .. 94.1
Calculate Male Calculate Female	Calculate Male Calculate Female