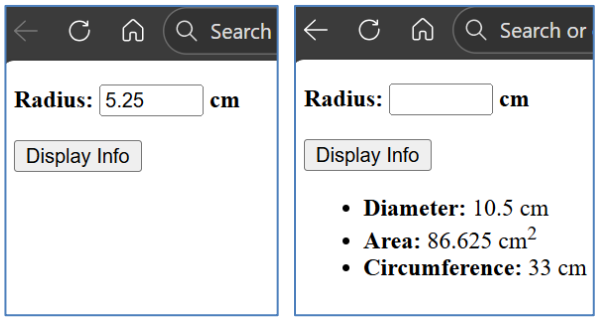
الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري
Arab Academy for Science, Technology & Maritime Transport
COURSE: WEB PROGRAMMING
LECTURERS: DR. ALI ALLAM/DR. MARY WILLIAM/DR. AHMED FOUAD
TAS: MR. ALY/MR. AHMED/MR. KAREEM/MR. MOURIS/MR. YOUSSEF

ASSIGNMENT (1) – PHP REVISION

- For all the following questions, print the desired output ***within the same submitted webpage, using the isset function***:

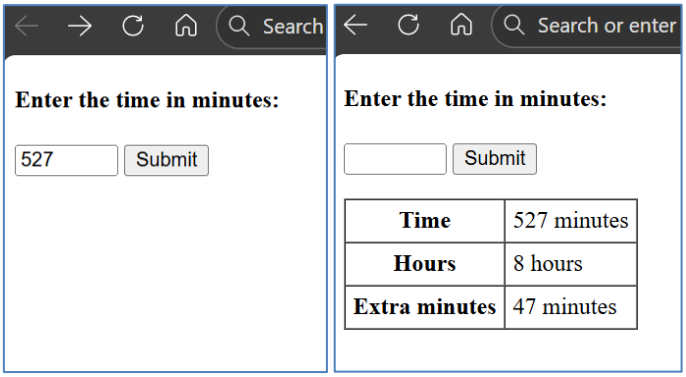
1. Write a program that prints the diameter, area and circumference of a circle whose radius is entered by the user. Use the value $\frac{22}{7}$ for the constant value of π.

   Diameter = 2r
   Area = πr²
   Circumference = 2πr



2. Write a program that asks the user to input a period of time in minutes. Then, the program breaks it into hours and remaining minutes.

   1 Hour ≡ 60 minutes

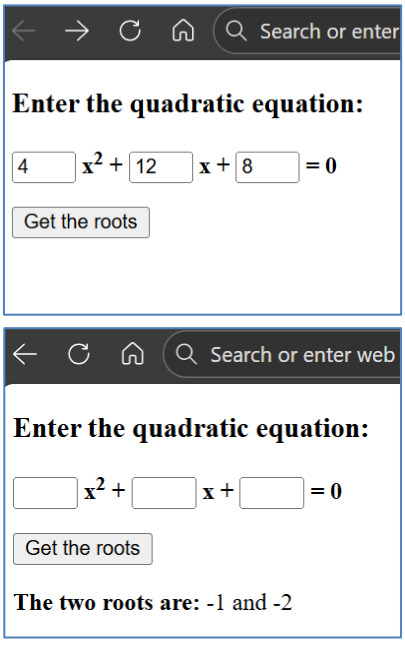


3. Write a program to find the two roots of a quadratic equation $ax^2 + bx + c = 0$. (e.g. $2x^2 + 4x - 16 = 0$), where the values of a, b and c are entered by the user. The two roots (x_1 and x_2) are two different values for (x) that satisfy the quadratic equation, and are calculated as follows:

$$x_1 = \frac{-b+\sqrt{b^2-4ac}}{2a} \qquad x_2 = \frac{-b-\sqrt{b^2-4ac}}{2a}$$

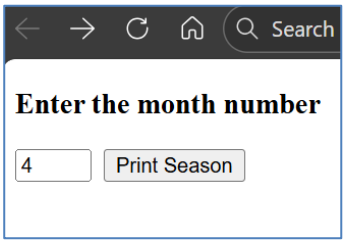
   The program should also validate that the value underneath the square root (***$b^2 - 4ac$***) is positive. Otherwise, if it is negative the program prints that the quadratic equation has no solution.

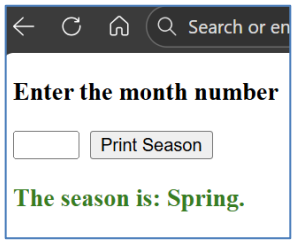
   *Tip: Use the PHP built-in function **sqrt(n)** to calculate the square root. e.g. sqrt(8) ≡ $\sqrt{8}$*



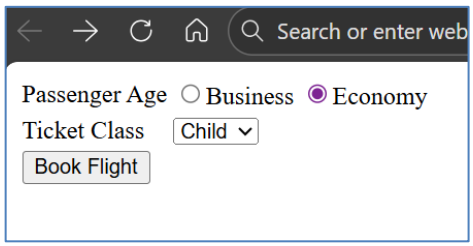
4. Write a program that asks the user to enter the number of the month (e.g. 2). Then, the program prints the season according to the following criteria:

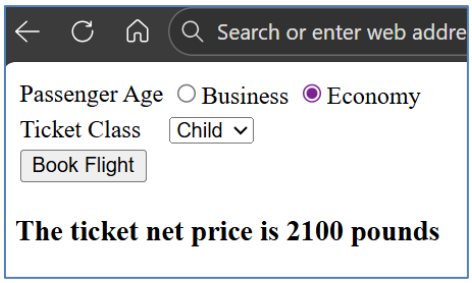
Months	Season	Text Color
3,4,5	Spring	Green
6,7,8	Summer	Red
9,10,11	Autumn	Orange
12,1,2	Winter	Blue
Otherwise	Invalid	Black





5. Write a program that calculates the net price of a ticket booked by a traveler. The user inputs the ticket type (business/economy), as well as the age of the passenger (infant/child/adult). Then, the program calculates and prints the net price after subtracting the discount amount.





Given the following booking data:

Age	Discount
Infant	60% (0.6)
Child	25% (0.25)
Adult	0%

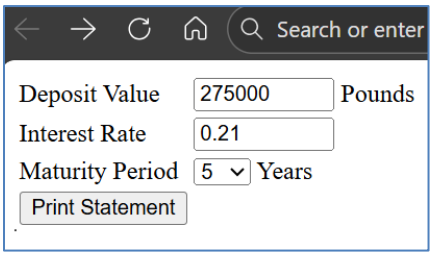
Ticket Type	Price
Business Class	5200 Pounds
Economy Class	2800 Pounds

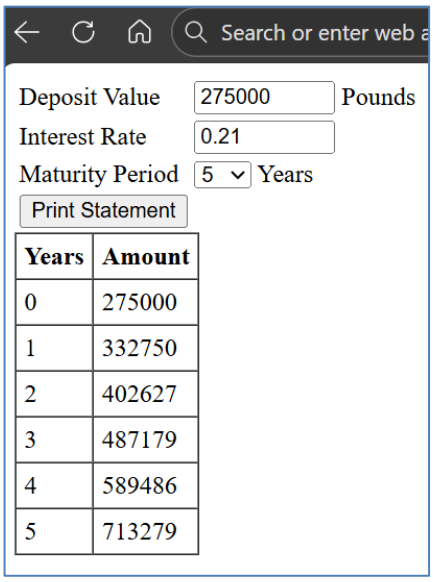
Net price = price – (price × discount)

6. A bank client purchases an investment certificate. The client should receive the accumulated annual interests throughout a certain number of years (i.e. maturity period) which may range between 3 to 10 years. The banker inputs the deposit amount, and the annual interest rate, as well as the chosen maturity period. The program calculates the amount to be received by the client throughout the chosen certificate maturity period, as shown below. The following formula is used to calculate the amounts according to the number of years:

$$\boldsymbol{Amount = Deposit\ Value \times (1 + Interest\ Rate)^{year}}$$

Note: the calculated amounts should be printed as integers, without decimal points.

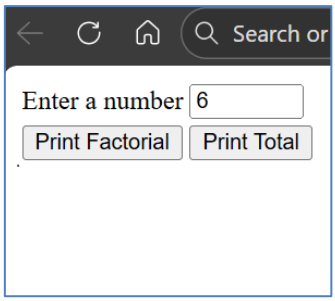


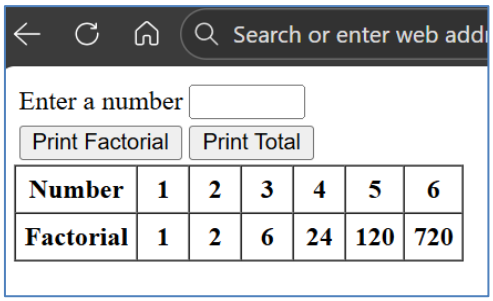


Years	Amount
0	275000
1	332750
2	402627
3	487179
4	589486
5	713279

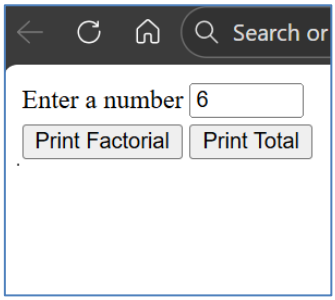
7. Write a program that calculates either the **total** or the **factorial** (i.e. product) of all the numbers between 1 and (m), where the value of (m) is entered by the user. The input form has two submit buttons, where the program displays a horizontal table showing either the (total) or the (factorial) of all the numbers, according to the clicked button.

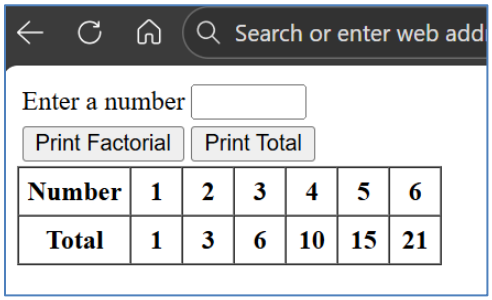
if the user clicked the "Print Factorial" button:





if the user clicked the "Print Total" button:





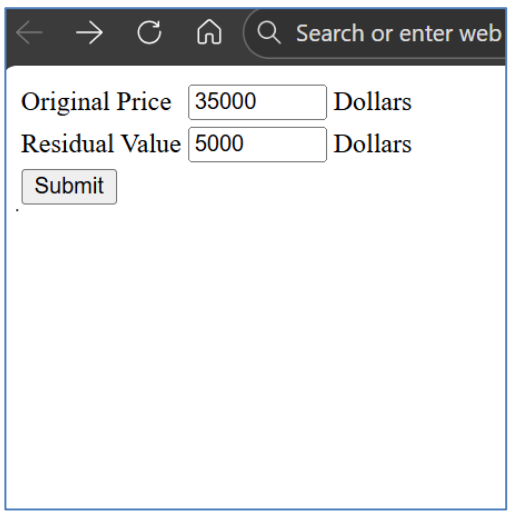
8. Given that a car depreciates over 5 years. The user is asked to enter its original price (e.g. $35000), as well as its residual value (e.g. $5000).

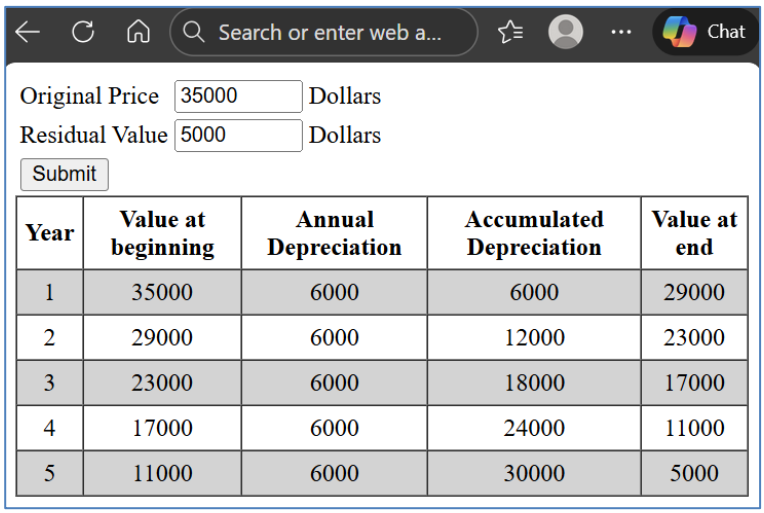
Write a program to calculate and print the following:
- The value of the car at the beginning of each year.
- The annual depreciation expense.
- The accumulated depreciation.
- The value of the car at the end of each year.

Given that:

Annual depreciation expense = $\frac{Price\ of\ fixed\ asset - Residual\ value}{life\ time\ of\ asset\ (years)}$

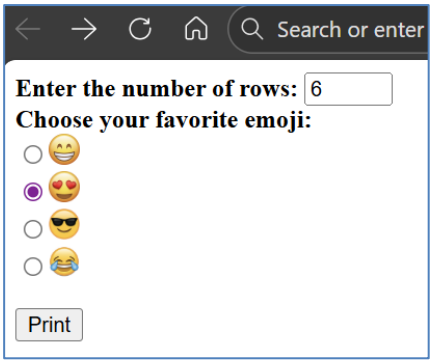
Car value at given time = Original price – Accumulated depreciation

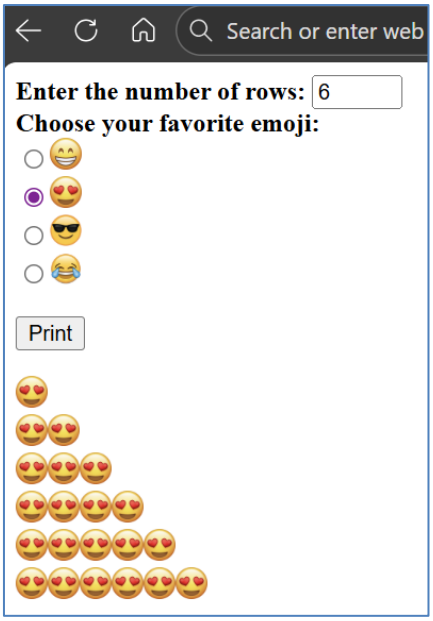




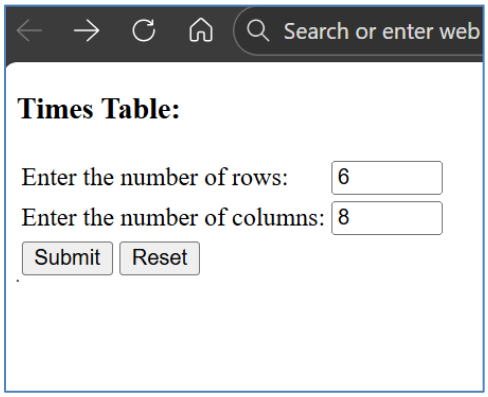
Year	Value at beginning	Annual Depreciation	Accumulated Depreciation	Value at end
1	35000	6000	6000	29000
2	29000	6000	12000	23000
3	23000	6000	18000	17000
4	17000	6000	24000	11000
5	11000	6000	30000	5000

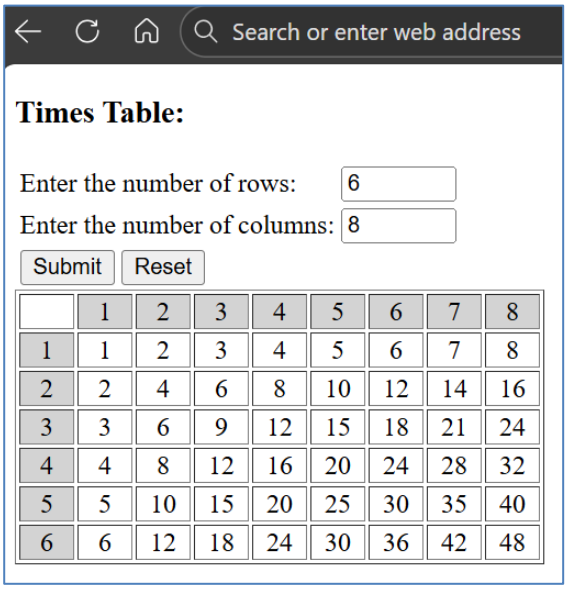
9. Write a program that asks a user to select their favorite emoji as well as the number of rows. The program then prints the pattern shown:





10. Write a program that prints the whole multiplication table of two numbers entered by the user.





	1	2	3	4	5	6	7	8
1	1	2	3	4	5	6	7	8
2	2	4	6	8	10	12	14	16
3	3	6	9	12	15	18	21	24
4	4	8	12	16	20	24	28	32
5	5	10	15	20	25	30	35	40
6	6	12	18	24	30	36	42	48