

Homework 1 on PHP (Basic)

Solve the following problems using PHP.

1. Write a PHP code that calculates the GPA of a student from the marks of 5 different courses stored in an associative array. The array contains course names as keys and corresponding marks (0–100) as values. [***Use BU grading scale, solution is given for this problem***]
2. Write a PHP code that calculates the GPA and Grade of a student from the marks of 5 different courses stored in an associative array. The array contains course names as keys and corresponding marks (0–100) as values. Show output as below:

Course-wise Grade Details:

Math: Marks = 85, Grade = B, Grade Point = 3.0

Physics: Marks = 92, Grade = A, Grade Point = 4.0

...

GPA for 5 courses: 2.60

3. Write a PHP code to calculate and display the **GPA** of multiple students based on their marks in several courses. Use a **multidimensional associative array** where each student's name is a key, and the value is another associative array containing course names and marks.

Hints:

1. *Declare multi-dimensional associate array as below:*

```
$students = [  
    "Alice" => ["Math" => 90, "Physics" => 85, "English" => 78],  
    "Bob"    => ["Math" => 65, "Physics" => 72, "English" => 55],  
    "Carol"  => ["Math" => 88, "Physics" => 93, "English" => 80],  
];
```

2. *Use two foreach loop to get marks.*

Show output as below:

Student: Alice

Math: Marks = 90, Grade = A, Grade Point = 4.0

Physics: Marks = 85, Grade = B, Grade Point = 3.0

English: Marks = 78, Grade = C, Grade Point = 2.0

GPA: 3.00

Student: Bob

Math: Marks = 65, Grade = D, Grade Point = 1.0

Physics: Marks = 72, Grade = C, Grade Point = 2.0

English: Marks = 55, Grade = F, Grade Point = 0.0

GPA: 1.00

4. Given a multidimensional associative array of students and their marks in several subjects, write a PHP Code for the following problem:

- Calculate the average marks for each student.
- Display the name of the student with the highest average.
- Calculate and display the average marks for each subject.
- Find and display the student who scored the highest in each subject.

5. For the previous problem (problem 4): Count how many students got:

- Grade A+
- Grade A
- Grade A-
- Grade B+
- Grade B
- Grade B-
- Grade C
- Grade D
- Grade F

Provide a summary of how many students fall into each grade category.

6. Write a PHP code that generates a detailed mark sheet for each student:

- Student name
- Marks per subject
- Grades per subject

- GPA
- Pass/Fail status

7. Practice the following simple problem also:

- a. Find min, max, mean, median, average from a given number list.
- b. Find the number of occurrences of any number from a list.
- c. Find a given number is even, and odd.
- d. Find a number whether it is prime or not using function.
- e. Find whether a given number is palindrome or not.
- f. Find the sum of digit from a given number.