

```
def calculate_monthly_charge(
    development_time_hours: float,
    hourly_rate: float,
    amortization_months: int,
    api_calls_per_month: int,
    cost_per_api_call: float,
    monthly_maintenance: float,
    additional_monthly_costs: float,
    profit_margin_percentage: float,
) -> float:
    """
```

Calculate the monthly charge for a service based on various cost factors.

Parameters:

- development_time_hours (float): The total number of hours spent on development and setup.
- hourly_rate (float): The rate per hour for development and setup.
- amortization_months (int): The number of months over which to amortize the development and

setup costs.

- api_calls_per_month (int): The number of API calls made per month.
- cost_per_api_call (float): The cost per API call.
- monthly_maintenance (float): The monthly maintenance cost.
- additional_monthly_costs (float): Any additional monthly costs.
- profit_margin_percentage (float): The desired profit margin as a percentage.

Returns:

- monthly_charge (float): The calculated monthly charge for the service.

"""

Calculate Development and Setup Costs (amortized monthly)

```
development_and_setup_costs_monthly = (  
    development_time_hours * hourly_rate  
) / amortization_months
```

Calculate Operational Costs per Month

```
operational_costs_monthly = (  
    (api_calls_per_month * cost_per_api_call)  
    + monthly_maintenance  
    + additional_monthly_costs  
)
```

Calculate Total Monthly Costs

```
total_monthly_costs = (  
    development_and_setup_costs_monthly  
    + operational_costs_monthly  
)
```

Calculate Pricing with Profit Margin

```
monthly_charge = total_monthly_costs * (  
    1 + profit_margin_percentage / 100  
)
```

```
return monthly_charge
```

Example usage:

```
monthly_charge = calculate_monthly_charge(  
    development_time_hours=100,  
    hourly_rate=500,  
    amortization_months=12,  
    api_calls_per_month=500000,  
    cost_per_api_call=0.002,  
    monthly_maintenance=1000,  
    additional_monthly_costs=300,  
    profit_margin_percentage=10000,  
)  
  
print(f"Monthly Charge: ${monthly_charge:.2f}")
```