

P02: Program Calculate the sum of 2 integer

INPUT: int num1, int num2 (such that $0 \leq \text{num1}, \text{num2} \leq 10^9$)

OUTPUT: num1 + num2

```
{  
    Diplay(num1 ' + ' num2 ' + ' num1 + num2)  
    Return num1 + num2  
}
```

P05: Program Calculate division of 2 integer

INPUT: integer num1, num2

OUTPUT: int result(is the division of num1 / num2)

```
{  
    If (num2 = 0) then  
        Display ERROR("Error: Cannot divide by 0")  
    Otherwise  
        Diplay(num1 ' / ' num2 ' = ' num1 / num2)  
        Return num1 / num2  
}
```

P13: Program Calculate the Parimeter & Area of a Triangle

INPUT: float edge1, edge2, edge3 (for all: $0 \leq \text{edge} \leq 10^9$)

OUTPUT: float parimeter, area of such triangle with 3 edges

```
{  
    // this is the half of the parimeter  
    Float s ← (edge1 + edge2 + edge3) / 2.0  
    // we use the Heron formula for calculate the area  
    Float area ← sqrt( s *(s - a) *(s - b) * (s - c))           // square root function  
  
    Display( s * 2 ‘ ‘ area)  
    Return {s * 2, area}  
}
```

P10: the Electricity meter

INPUT: int preConsume, curConsume (for all: $0 \leq \text{preConsume} \leq \text{curConsume} \leq 10^9$)

OUTPUT: int consumed (the consumed electricity)

```
{  
    Display(curConsume ' - ' preConsume ' = ' curConsume - preConsume)  
    Return curConsume - preConsume  
}
```

P12: Program Calculate the Toal amount to be paid

INPUT: integer quantity, float price(for all: $0 \leq \text{quantity}$, $\text{price} \leq 10^9$)

OUTPUT: integer price of the goods including 10% of tax

```
{
```

```
// we need to pay higher than the price
```

```
// if the price has decimal we need to get the ceil value to get enough money
```

```
// ceil function ➡ get the smallest integer that greater than the value
```

```
    Display(ceil(quantity * price * 1.1))
```

```
    Return ceil(quantity * price * 1.1)
```

```
}
```

P16: Program Count Plate Number

INPUT: integer plate(for all: $10000 \leq \text{plate} \leq 99999$)

OUTPUT: the total of all numbers on the plate

```
{  
    integer total  $\leftarrow$  0  
    integer round  $\leftarrow$  5  
  
    Loop(round > 0 )  
        total  $\leftarrow$  total + ( plate % 10) // get the rightmost number  
        plate  $\leftarrow$  plate / 10           // Move to the next number  
        round  $\leftarrow$  round - 1  
  
    Return total  
}
```

P17: Exchange Money

INPUT: positive integer amount (for all: $0 < \text{amount} \leq 10^9$)

OUTPUT: void (we only need to print out the screen so no need to return value)

```
{  
    Int array  $\leftarrow$  {500.000, 200.000, 100.000, 50.000, 20.000, 10.000, 5.000, 2.000, 1.000}  
    Int array_size  $\leftarrow$  9  
    Int index  $\leftarrow$  0  
  
    Loop ( index < array_size)  
        Int count  $\leftarrow$  0  
  
        Loop ( true)  
            If ( amount % array[index] = 0 AND amount != 0) then  
                Count  $\leftarrow$  count + 1  
                Amount  $\leftarrow$  amount – array[index]  
            Otherwise  
                Breake  
  
            Display( array[index], ‘: ’, count)  
            Index  $\leftarrow$  index + 1  
}
```

P23: Shared Region

INPUT: float length, radius(for all: $0 < \text{length}$, $\text{radius} \leq 10^9$)

OUPUT: float sharedArea (round to 2 decimals)

```
{  
    Float PI ← 3.14\  
  
    // the triangle is inside the circle  
  
    // the shared region is the area of 3 triangle  
  
    If (length < radius) then  
        Display(PI * (radius) ^ 2)  
        Return PI * radius ^ 2  
  
    Otherwise  
        Display(1 / 2 * PI * radius ^ 2 + 3 * length ^ 2 * sqrt(3) / 4)  
        Return 1 / 2 * PI * radius ^ 2 + 3 * length ^ 2 * sqrt(3) / 4  
}
```


P24: Promotion Programm

INPUT: float percent, quota (for all: $0 < \text{percent}$, $\text{quota} < 10^9$)

OUTPUT: float(2 decimals) money(the amount of money need to spend)

```
{  
    Display(quota)  
    return (100 / percent) * quota  
}
```

P25: Calculate pace & speed

INPUT: float distance, int hour, minute, float second (for all $0 \leq \text{distance, hour, minute, second} \leq 10^9$)

OUTPUT: float pace, speed (round to 2 decimals)

```
{  
    Float hour_count = hour + minute / 60 + second / 3600  
    Float speed = distance / hour_count  
    Float pace = hour_count * 60 / distance  
  
    Display(pace, " ", speed)  
    Return { pace, speed}  
}
```