
SERVER-SIDE WEB DEVELOPMENT

Lecture 2

TODAY'S TOPICS



- Conditional Statements
- Loops
- Functions
- Debugging
- Participation: Deck of Cards
- Exercise: Dominoes

ANNOUNCEMENTS

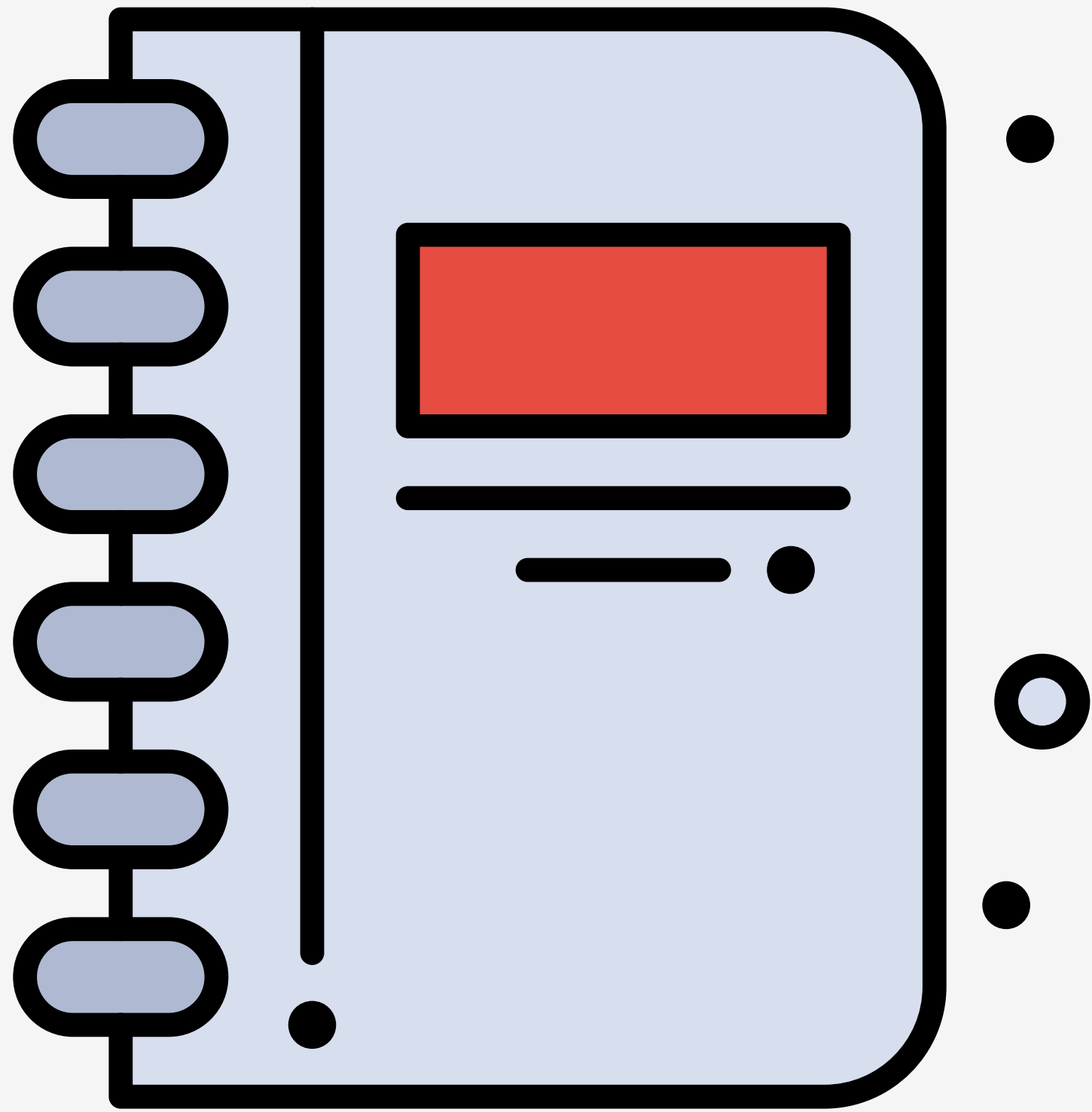
- Sign-in Sheet



QUESTIONS

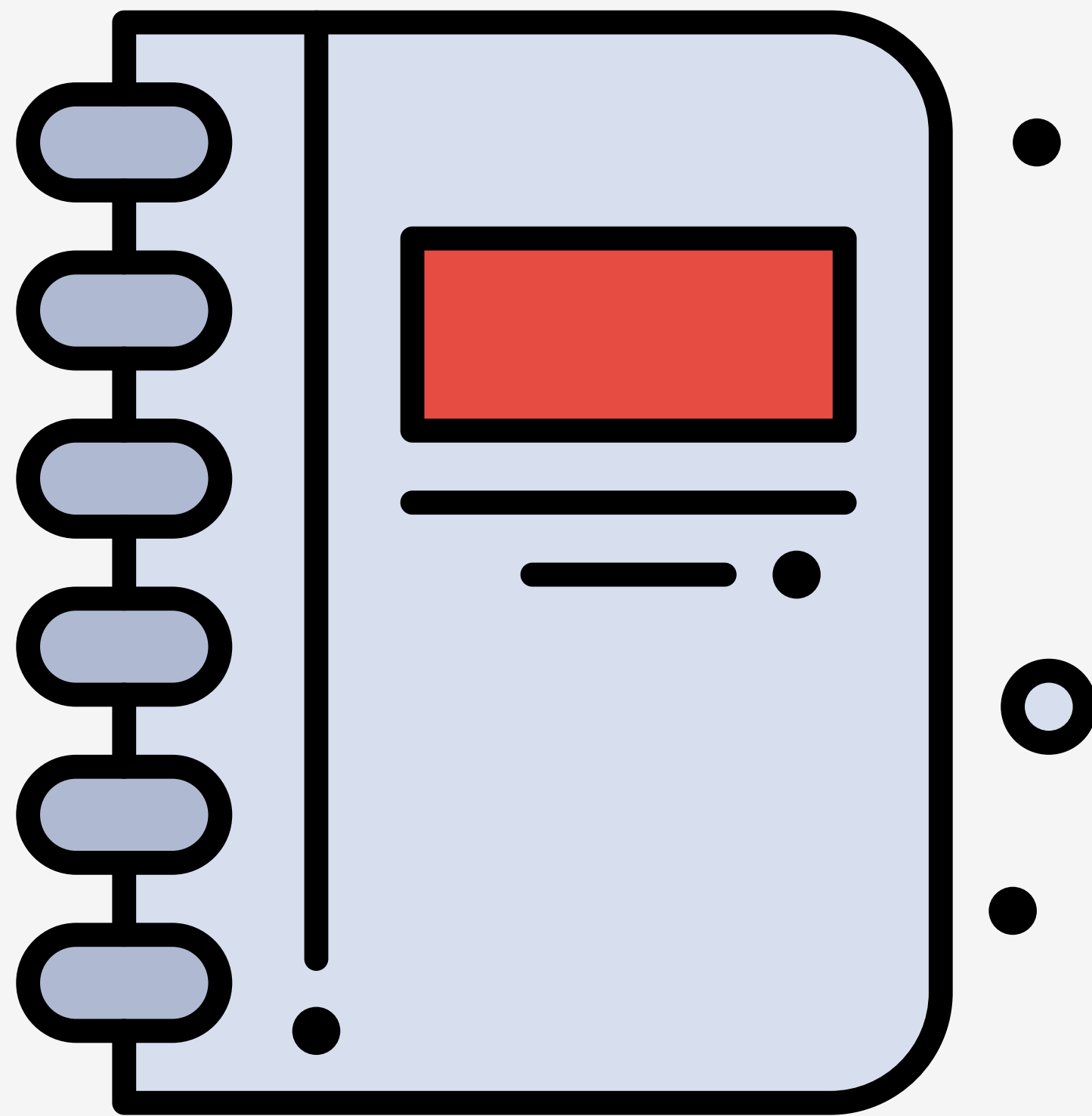
CONDITIONAL STATEMENTS

CONDITIONAL STATEMENTS



- Conditional statements control the flow of a program
- PHP has two conditional statements
 - `if`
 - `switch`

IF...ELSE STATEMENTS



- The **if** statement will execute a block of code, if it's expression is **TRUE**
- The **else** statement can be used to execute an alternate block of code, if the previous if expression is **FALSE**
- The **elseif** statement can be used to check for multiple conditions.
- **NOTE:** PHP also has **else if**, but it will only work with curly braces

IF STATEMENT

```
<?php
    $a = 3;
    $b = 4;

    // comparing a to b
    if ($a > $b) {
        echo "a is larger than b";
    } elseif ($a < $b) {
        echo "a is smaller than b";
    } else {
        echo "a is equal to b";
    }
}
```


IF STATEMENT

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<?php
    $a = 3;
    $b = 4;

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    }
}
```

IF STATEMENT

```
<?php
    $a = 3;
    $b = 4;

    // comparing a to b
    if ($a > $b) :
        echo "a is larger than b";
    elseif ($a < $b) :
        echo "a is smaller than b";
    else :
        echo "a is equal to b";
    endif;
```

IF STATEMENT

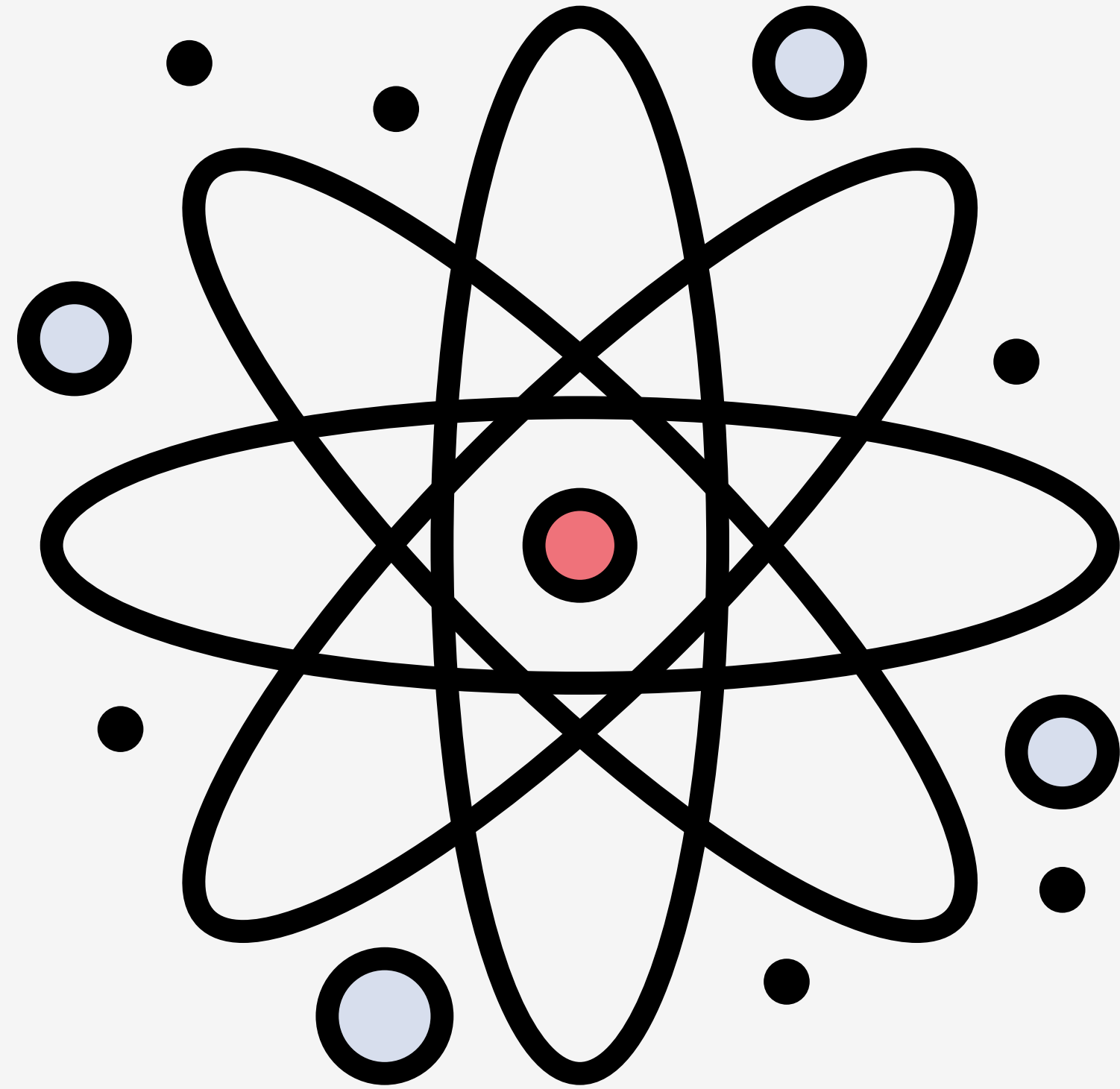
```
<?php
    $a = 3;
    $b = 4;

    // comparing a to b
    if ($a > $b) :
        echo "a is larger than b";
    else if ($a < $b) :
        echo "a is smaller than b";
    else :
        echo "a is equal to b";
    endif;
```

WILL NOT COMPILE

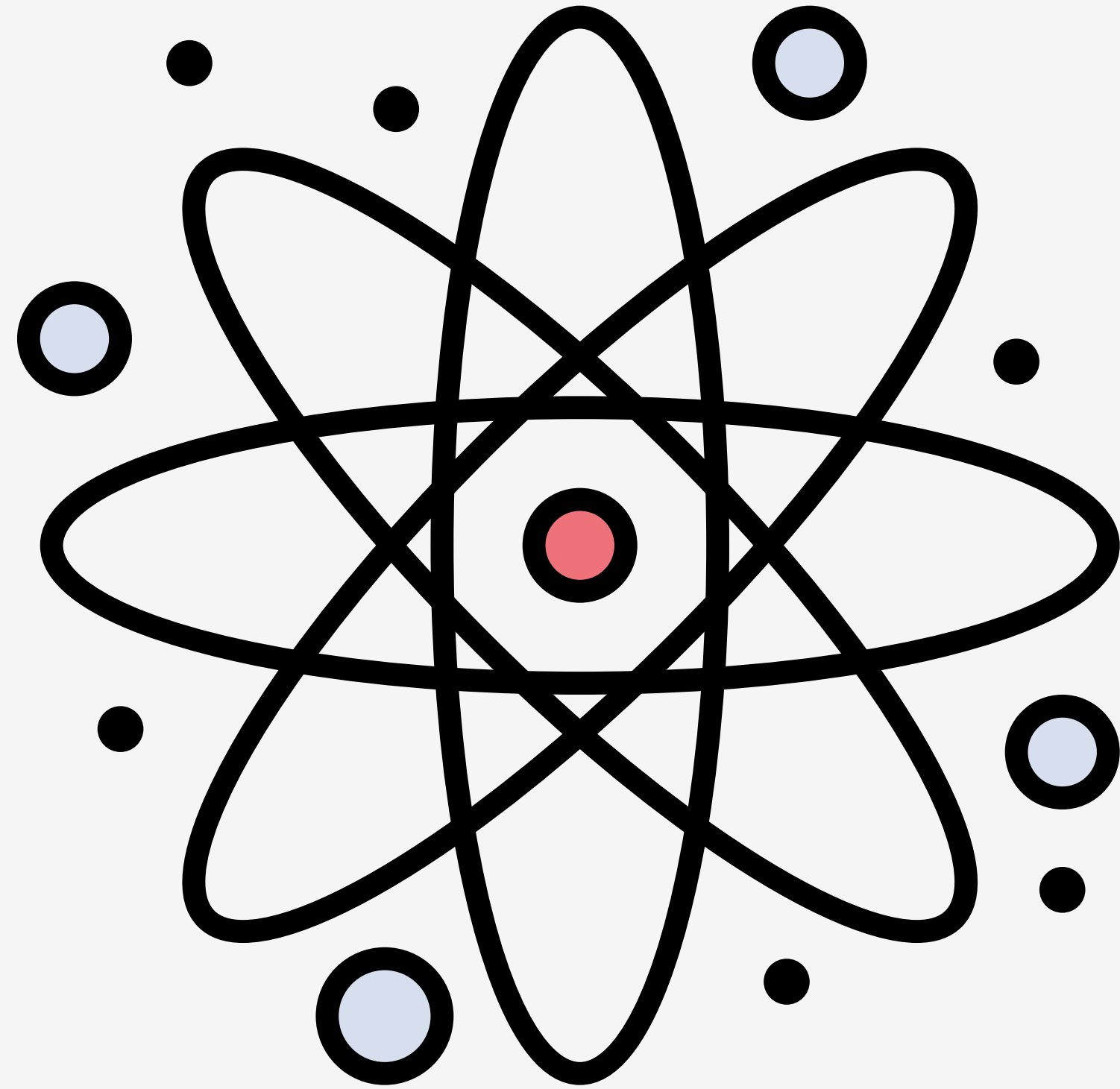
LOOPS

LOOPS



- Loops are used to carry out repetitive tasks or repeat a block of code
- The three most common loops in PHP are:
 - `while`
 - `for`
 - `foreach`

WHILE



- The **while** loop will continue to loop *while* the condition is **TRUE**
- The **while** loop can be used in any situation, but best when the number of iterations is unknowable

WHILE

```
<?php
    $count = 1;

    // output 1 to 10
    while ($count <= 10) {
        echo "{$count}, ";
        $count++; // increment by 1
    }
```

WHILE

```
<?php
    $count = 1;

    // output 1 to 10
    while ($count <= 10) {
        echo "{$count}, ";
    }
```

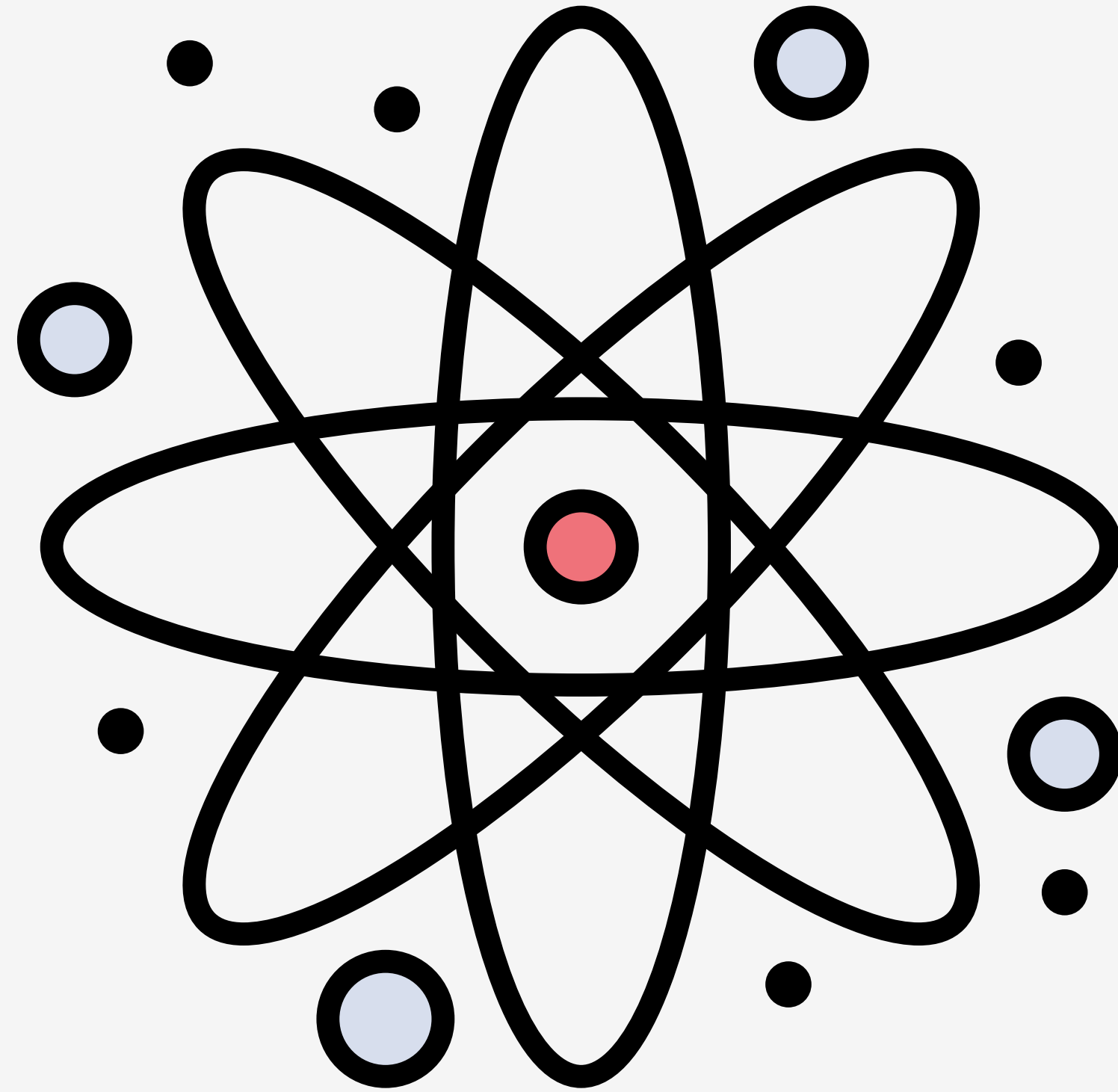
INFINITE LOOP

WHILE

```
<?php
    $coin = 1;

    // keep looping until $coin === 0
    while ($coin) {
        // randomly choose a number between 0 and 1
        $coin = rand(0, 1);
        echo "{$coin} <br>";
    }
```

FOR



- The **for** loop consists of a three part expression: **initialization**, **condition**, and **iteration**
- The **condition** is checked before each loop and, if **TRUE**, will execute the block of code
- The **iteration** will execute at the end of each loop

FOR

```
<?php
    // output 1 to 10
    for ($count = 1; $count <= 10; $count++) {
        echo "{$count}, ";
    }
```

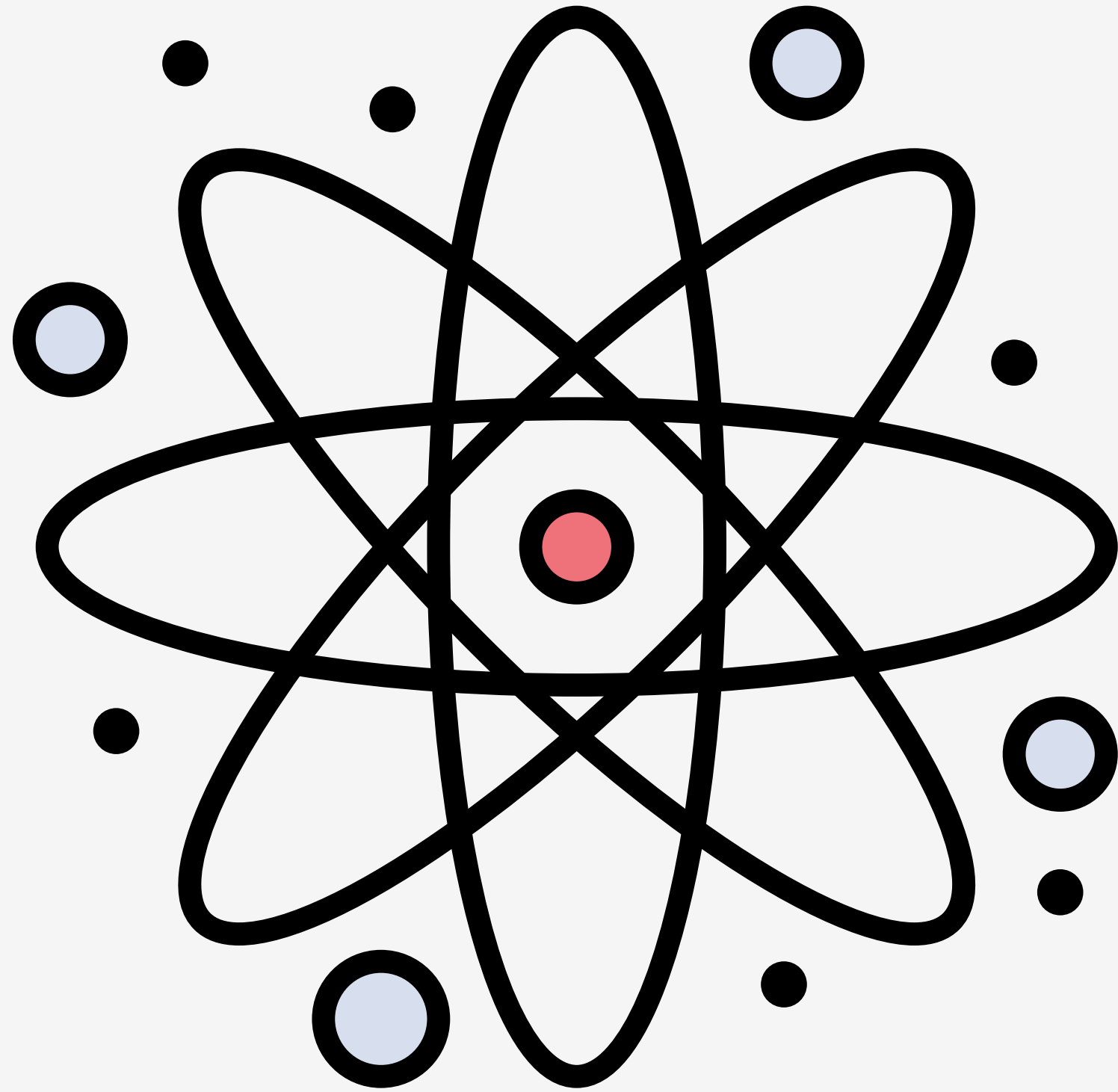
FOR

```
<?php
    $ages = [4, 8, 15, 16, 23, 42];
    $cnt = count($ages);

    for ($i = 0; $i < $cnt; $i++) {
        echo "{$ages[$i]} <br>";
    }
```

INDEXED ARRAYS ONLY

FOREACH



- The **foreach** loop is designed to iterate over arrays
- The **foreach** expression consists of:
 - the array
 - **as** keyword
 - a variable that will hold the item's value

FOREACH

```
<?php
    $ages = [4, 8, 15, 16, 23, 42];

    foreach ($ages as $age) {
        echo "Age: {$age} <br>";
    }
```

FOREACH

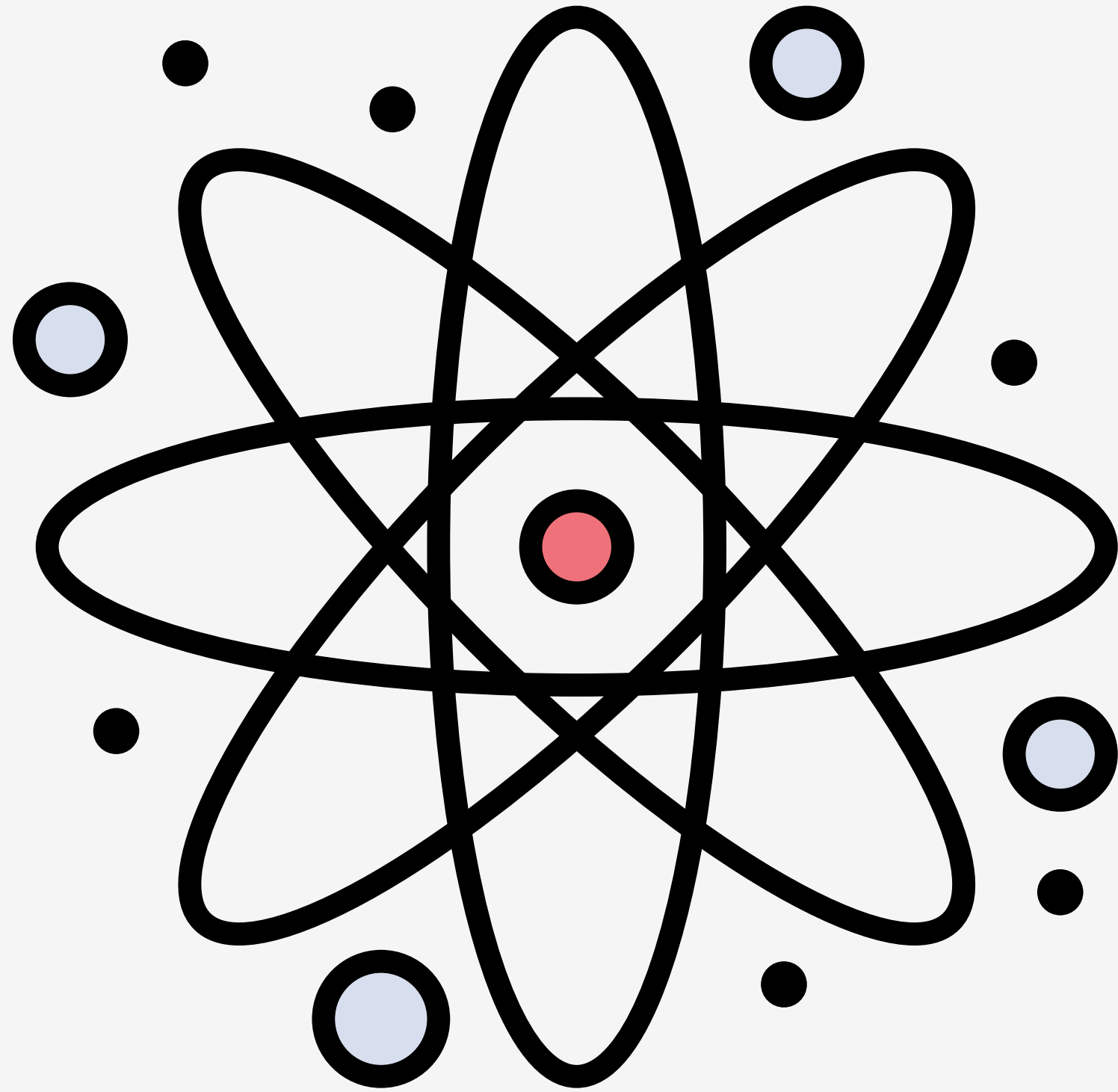
```
<?php
    $person = [
        "name"    => "Michael",
        "title"   => "Professor",
    ];

    foreach ($person as $key => $value) {
        echo "{$key}: {$value}<br>";
    }
```

HANDS-ON

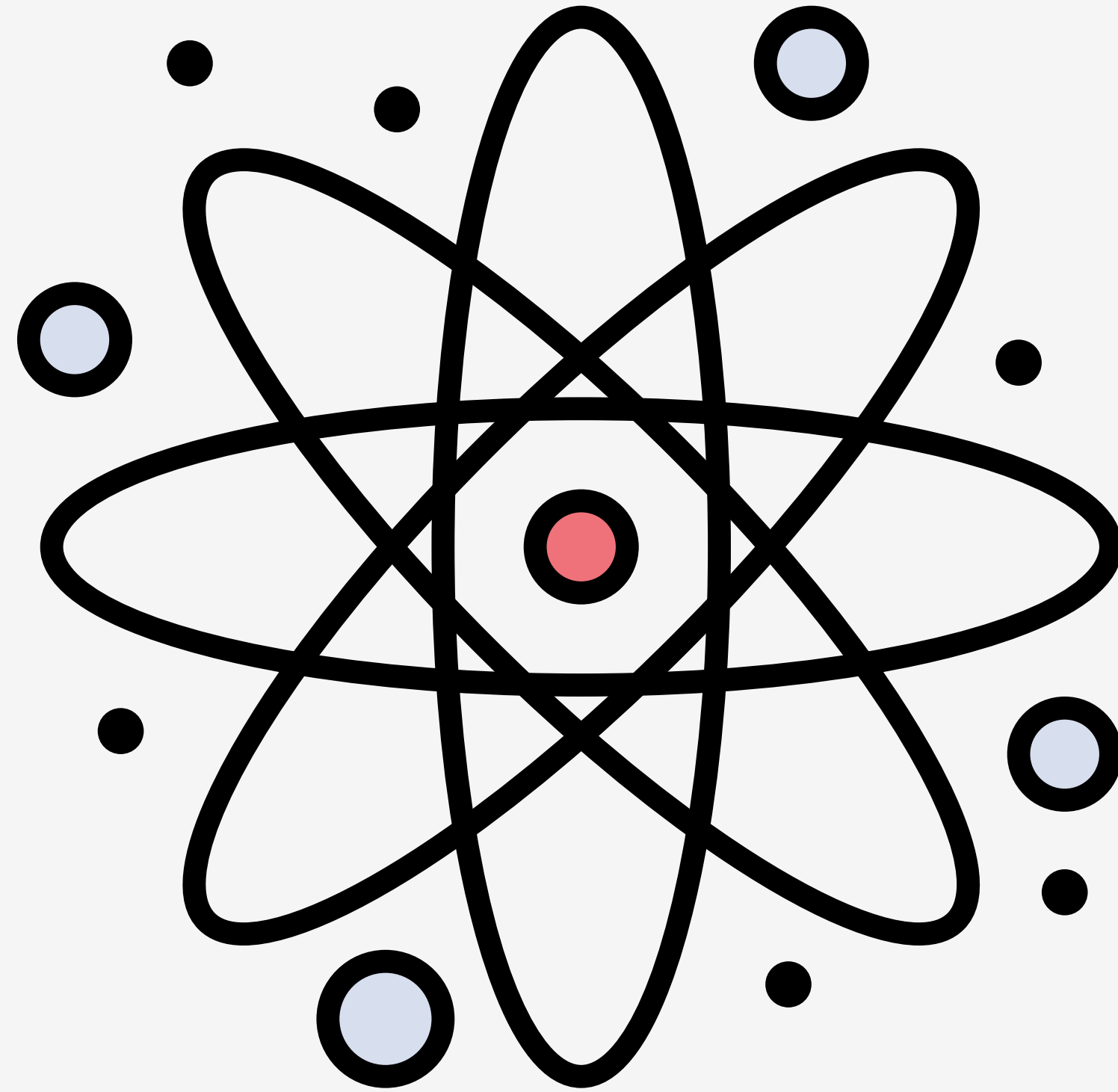
FUNCTIONS

FUNCTIONS



- A function is a block of code that can to be executed at some point in the future
- A function is defined using the following:
 - The **function** keyword
 - The name
 - Set of parentheses **()**
 - Set of curly braces **{ }**

FUNCTIONS



- A function will not execute until it is called
- To call a function, use the function's name followed by a set of parentheses
- A function can take multiple **arguments**
- A function can return value with the **return** statement

FUNCTION

```
<?php
    // defining the function
    function say_hello() {
        echo "Hello World!";
    }

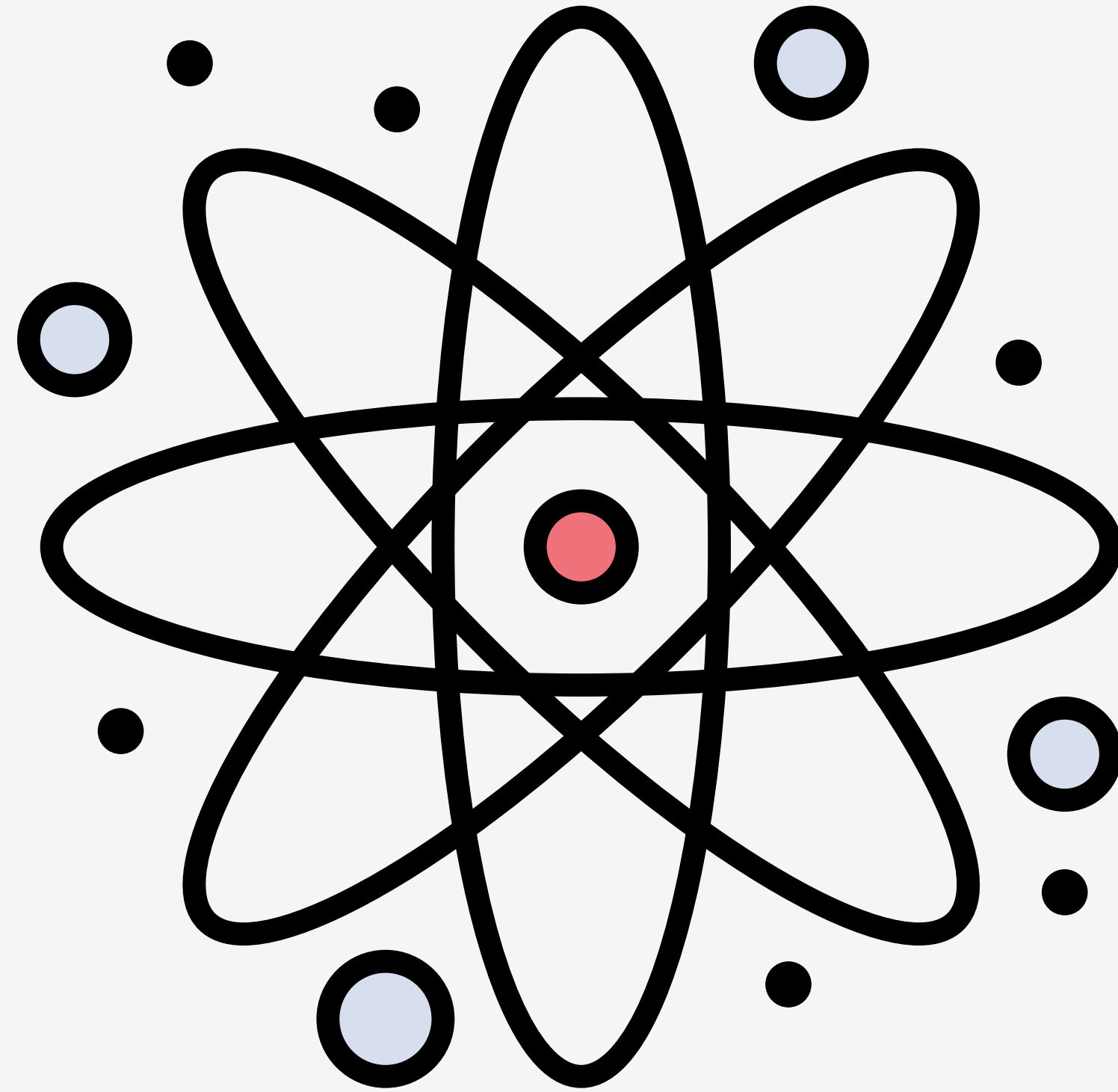
    // calling the function
    say_hello(); // Hello World!
```

FUNCTION

```
<?php
    function add ($a, $b) {
        return $a + $b;
    }

    $result1 = add(3, 4); // 7
    $result2 = add(5, $result1);
    echo $result2; // 12
```

VARIABLE SCOPE



- Two types of scope: **global scope** and **local scope**
- Variables defined inside a function are in **local scope** and only available inside the function
- Variables defined outside of a function are in **global scope** and are available everywhere **EXCEPT** inside a function
- Use the **global** keyword to use global variables inside a function

FUNCTION

```
<?php
    $a = 1; // global scope

    function test() {
        return $a; // local scope
    }

    var_dump(test()); // NULL
```

FUNCTION

```
<?php
    $a = 1; // global scope

    function test() {
        global $a; // global scope

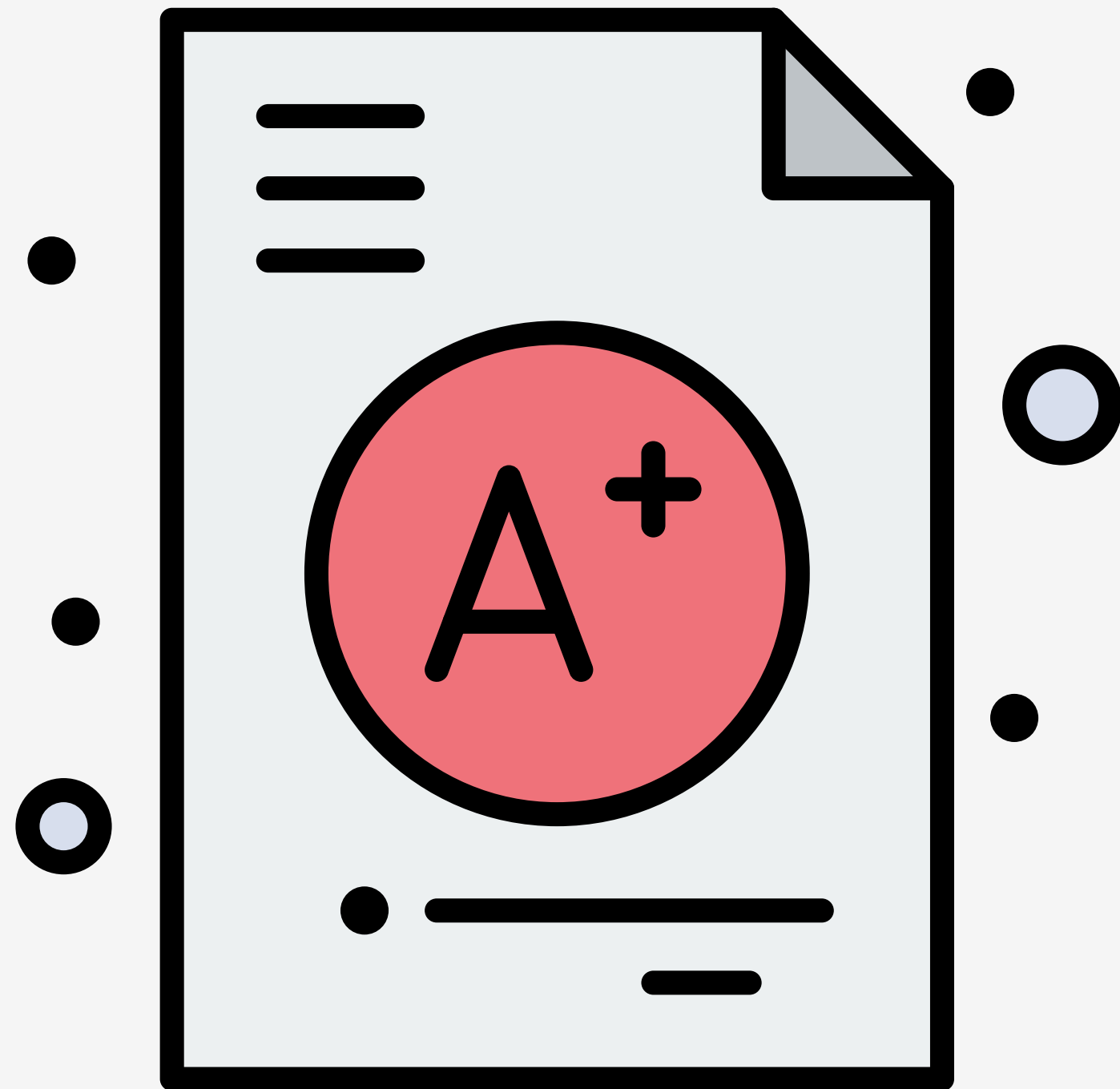
        return $a; // global scope
    }

    var_dump(test()); // int(1)
```


HANDS-ON

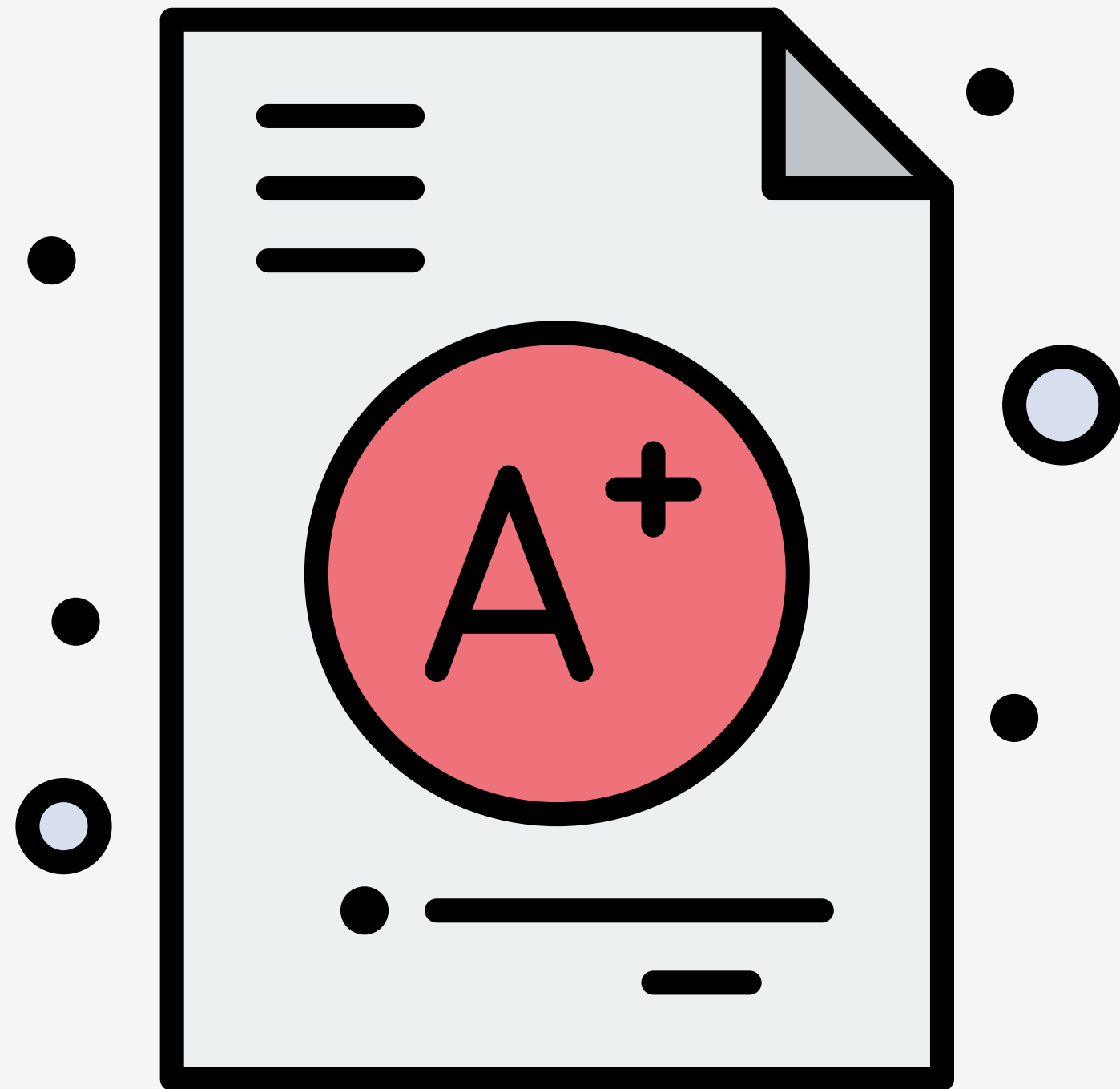
DEBUGGING

COMMON PROBLEMS



- Server Not Running
- PHP Not Working
- Syntax Error
 - Typo
 - Missing Semicolon
 - Missing bracket or quote
 - Misspelled variable name

ERROR TYPES



- Fatal Errors
- Parse Errors
- Warnings & Notices
- Deprecated

FATAL ERROR

```
<?php
    // undefined function
    $array = [1, 2, 3, 4];
    var_dum($array);
```

PARSE ERROR

```
<?php
    // missing semicolon
$array = [1, 2, 3, 4]
var_dump($array);
```

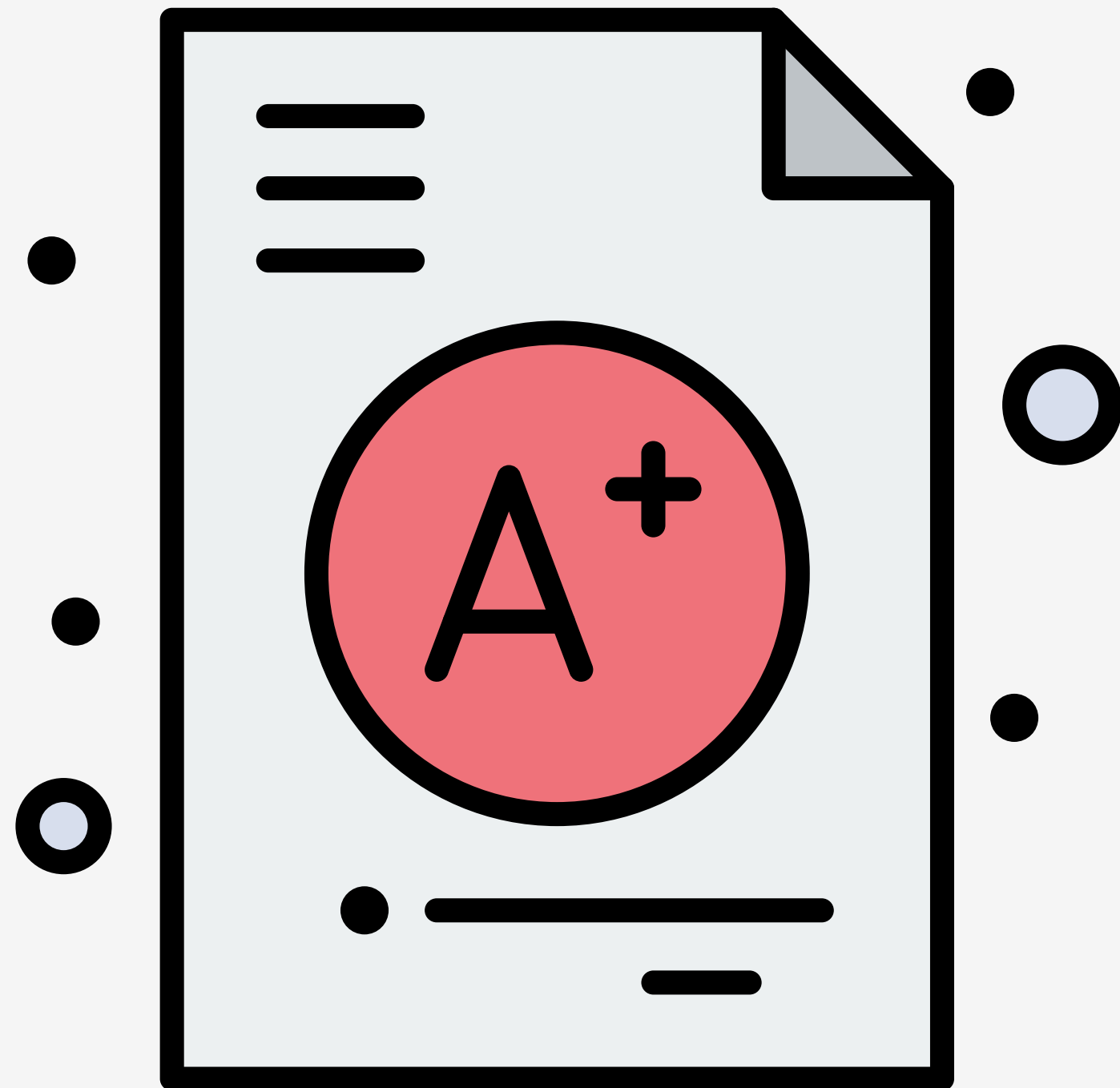
NOTICE

```
<?php
    // array to string
    $array = [1, 2, 3, 4];
    echo $array;
```

DEPRECATED

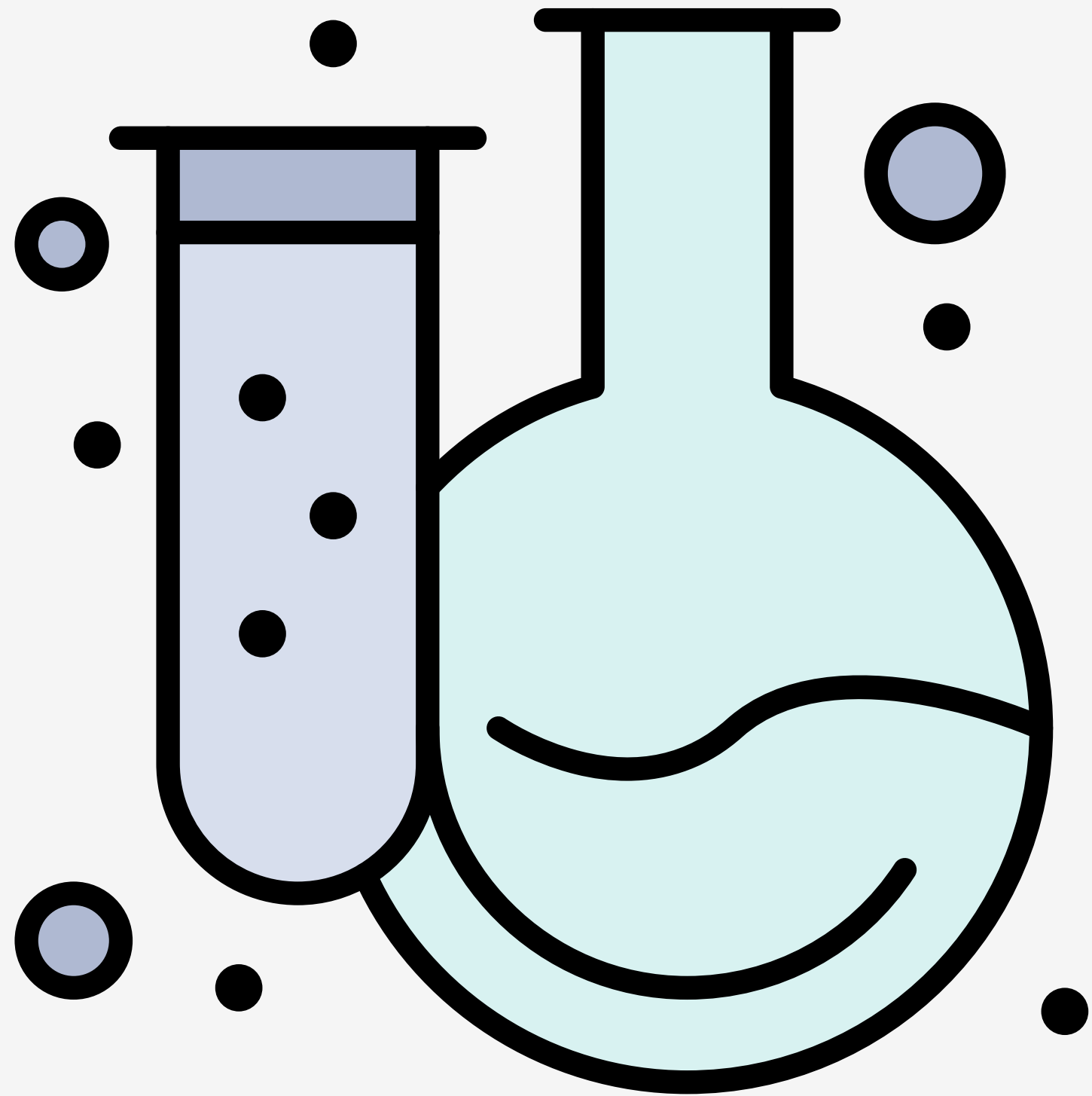
```
<?php
    // deprecated function
    $array = [1, 2, 3, 4];
    $item = each($array);
```

TROUBLESHOOTING



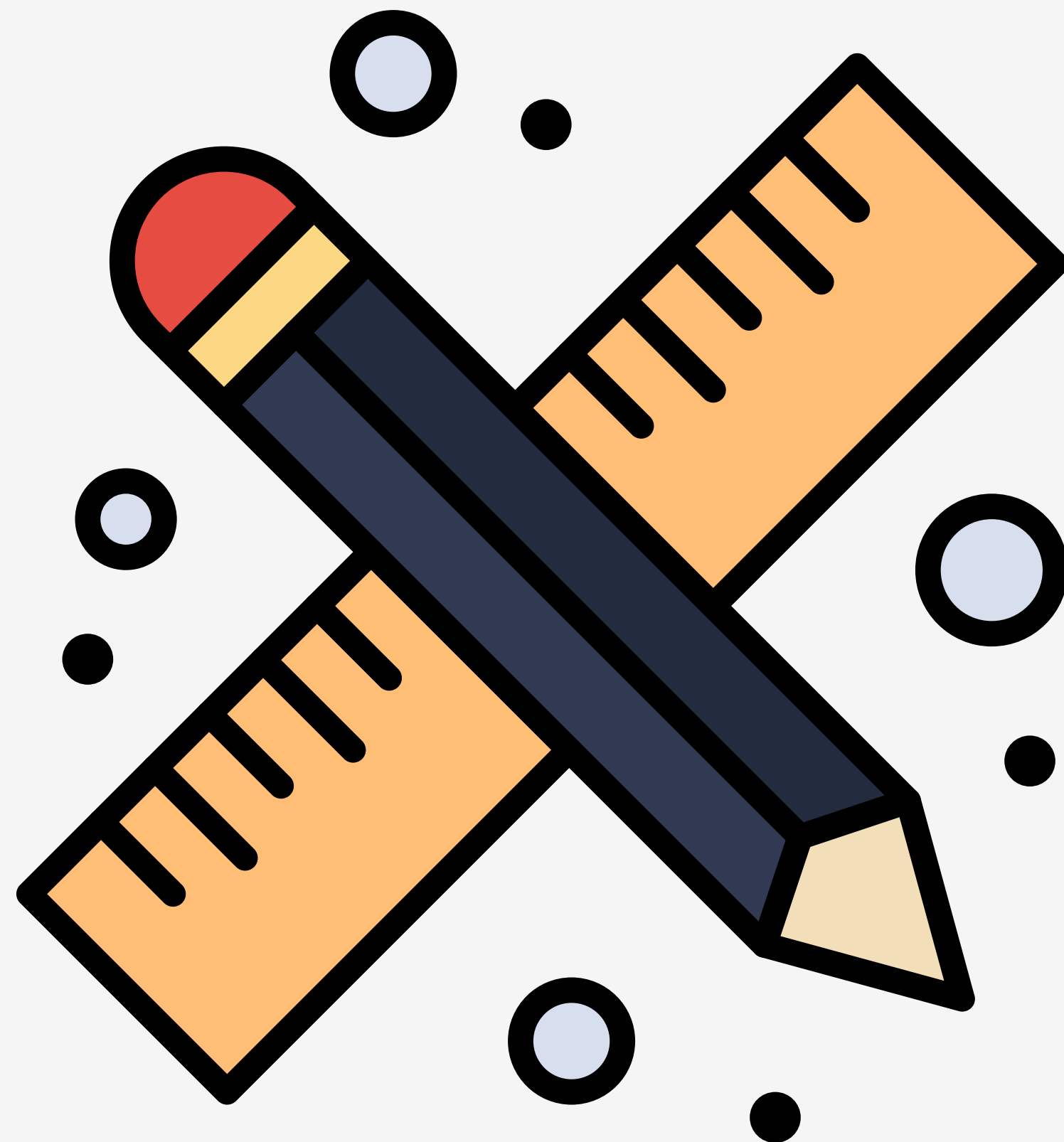
- `echo`
- `print_r()`
- `var_dump()`
- `gettype()`
- `get_defined_var()`

DECK OF CARDS



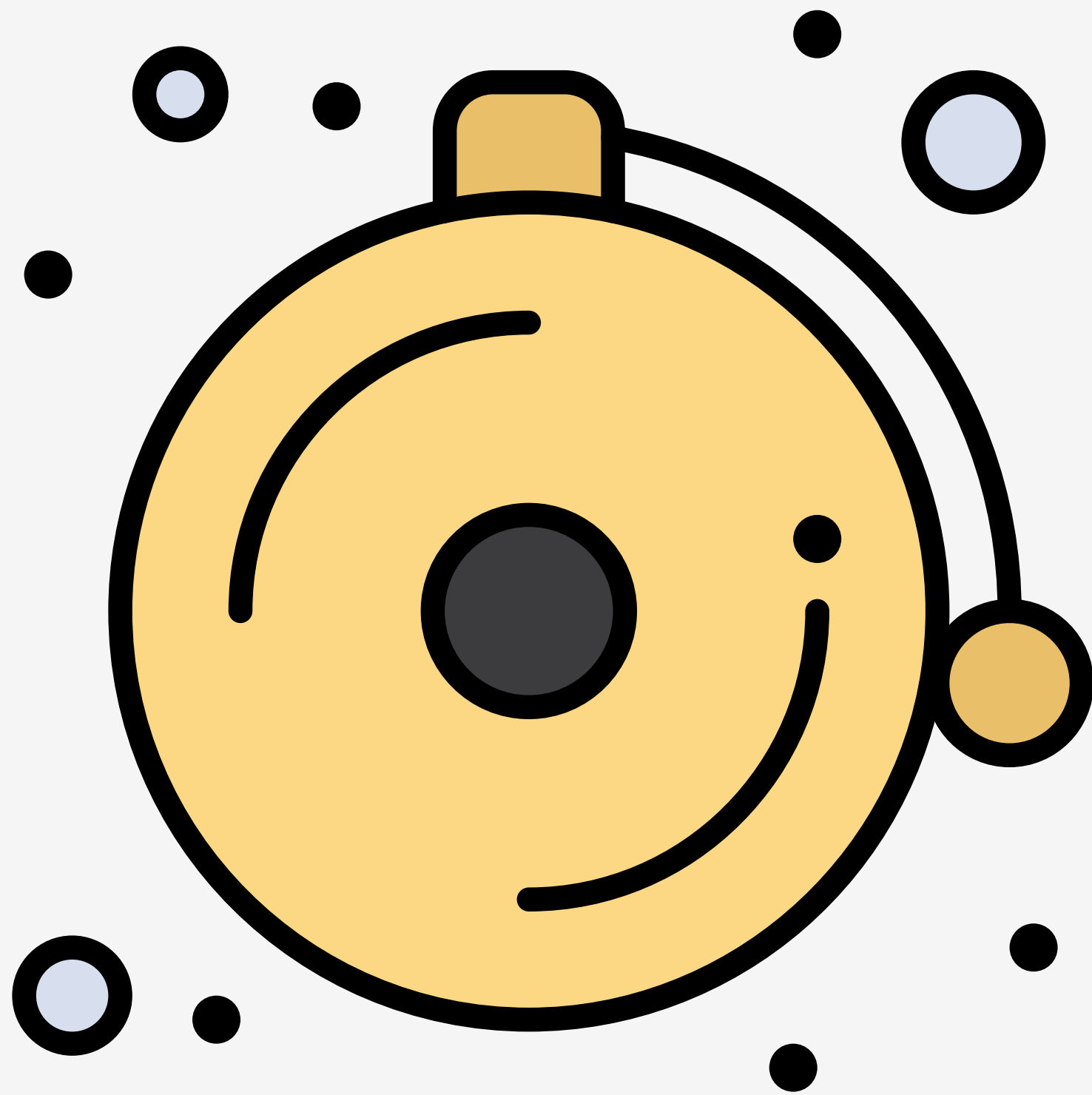
- *GITHUB CLASSROOM ASSIGNMENT*
- Use arrays and loops to generate and display all 52 cards of a deck
- Use the `rand()` function to generate 52 random cards
- Provide comments and pseudo code
- Submit your repository URL
- *DUE:* Mon. Jan. 13 @ 11:59 PM

DOMINOES



- *GITHUB CLASSROOM ASSIGNMENT*
- Use loops and an array to generate 100 random dominoes
- Use the `rand()` function to randomize the dominoes
- Use the CSS classes provided
- Submit your repository URL
- *DUE:* Mon. Jan. 20 @ 11:59 PM

NEXT TIME...



- Predefined Variables
- Includes
- **Participation:** aMazing Adventure
- **Exercise:** Functional Fishing