C ++ :

OBJECTS AND CLASSES

Classes and Objects

01
- ❑ Simple Class,
- ❑ Defining Member Functions.

02
- ❑ Parsing Object as an Argument.

03
- ❑ Returning Object from Functions,
- ❑ Friend Classes.

04
- ❑ Pointer to Object,
- ❑ Array of Pointer to Object.

Simple Classes

01 A Class is a user defined data-type which has data members and member functions.

02 It is a user-defined data type, which holds its own data members and member functions, which can be accessed and used by creating an instance of that class.

03 A C++ class is like a blueprint for an object.

04 Classes are the standard unit of programming

Defining Member Functions :

❖ Member functions are operators and functions that are as members of a class.

❖ Member functions do not include operators and functions declared with the friend specifier.

❖ These are called friends of a class.

❖ You can declare a member function as static; this is called a static member function.

```
class Box {
    public:
        double length;          // Length of a box
        double breadth;         // Breadth of a box
        double height;          // Height of a box
        double getVolume(void);// Returns box volume
};
```

Member Functions in Class

There are 2 ways to define a member function:

- Inside class definition

- Outside class definition

To define a member function outside the class definition we have to use the scope resolution :: operator along with class name and function name.

Note that all the member functions defined inside the class definition are by default **inline**, but you can also make any non-class function inline by using keyword inline with them.

```
class Box {
   public:
      double length;        // Length of a box
      double breadth;       // Breadth of a box
      double height;        // Height of a box
      double getVolume(void);// Returns box volume
};
```

Code 1

Member Functions in Class

```cpp
#include <iostream>

using namespace std;
class Students
{
    // Access specifier
    public:

    // Data Members
    string stdname;

    // Member Functions()
    void printname()
    {
        cout << "Student name is: " << stdname;
    }
};

int main() {

    // Declare an object of class geeks
    Students obj1;

    // accessing data member
    obj1.stdname = "Abhi";

    // accessing member function
    obj1.printname();
    return 0;
}
```

C:\Users\Aishani Anavkar\Desktop\Data Science Sem 2\Cpp Practicals\basic2.exe

```
Student name is: Abhi
---------------------------------
Process exited after 0.6347 seconds with return value 0
Press any key to continue . . .
```
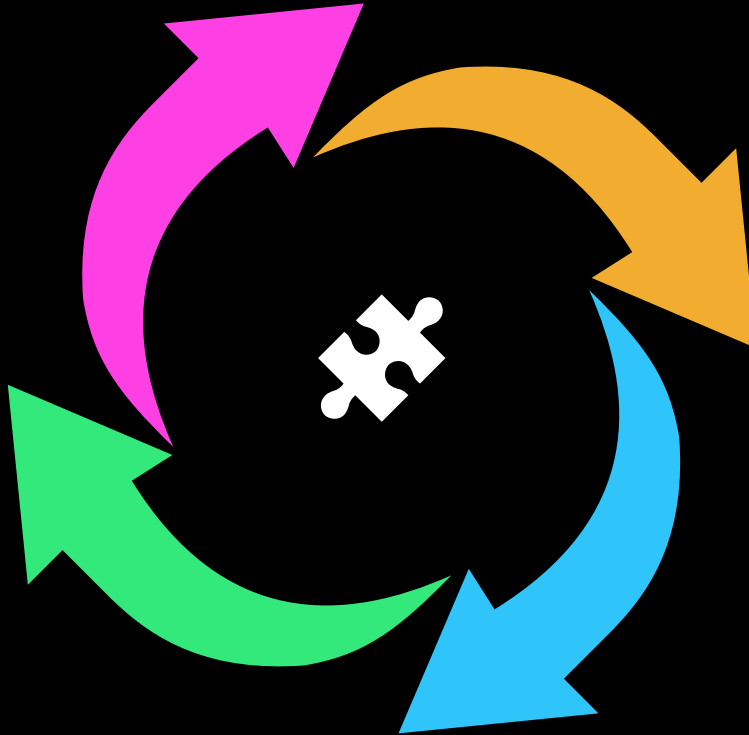
RETURNING OBJECTS FROM FUNCTION

Function can also return objects either by value or by reference.

This value is further assigned to another object in the calling function.

When an object is returned by value from a function, a temporary object is created within the function, which holds the return value.

CODE : 3

Class definition

```
class class_name {
    public:
                constructor and destructor
                member functions
    private:
                data members
```

Pointer to Object

a **pointer** holds the address of an object stored in memory. The pointer then simply "points" to the object. The type of the object must correspond with the type of the pointer.
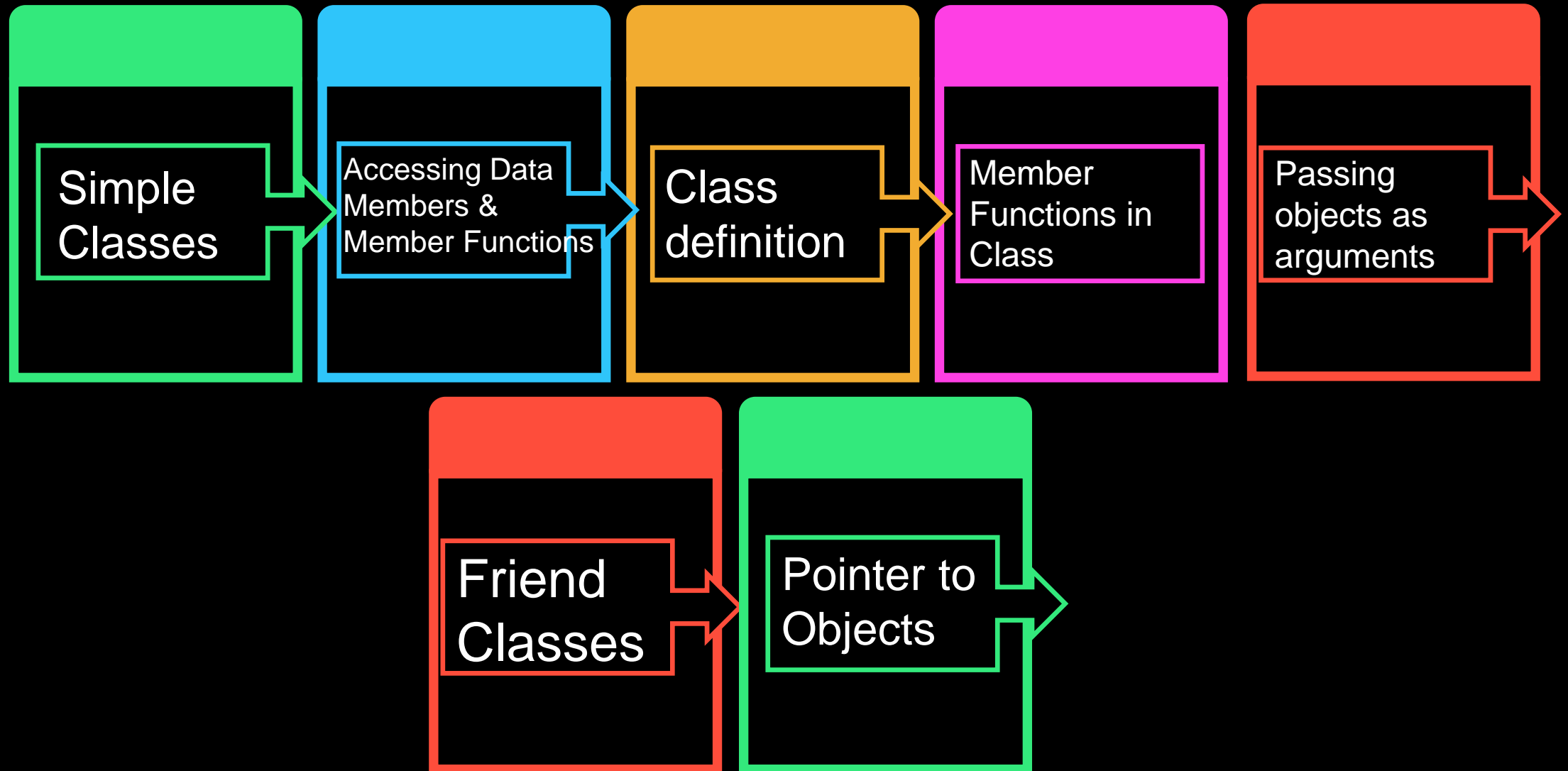
```
type *name;    // points to a value of the specified type.
```
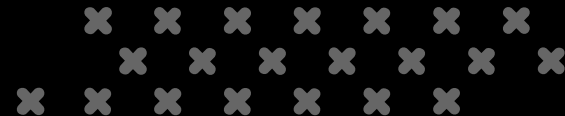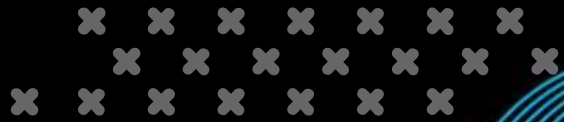
type refers to the data type of the object our pointer points to, and name is just the label of the pointer. The * character specifies that this variable is in fact, a pointer. Here is an example:

```
int *p;    // integer pointer
string *q;    // string pointer
```

Code 5

Summary

Simple Classes

Accessing Data Members & Member Functions

Class definition

Member Functions in Class

Passing objects as arguments

Friend Classes

Pointer to Objects

THANK YOU

Passing an Object as Argument

To pass an object as an argument we write the object name as the argument while calling the function the same way we do it for other variables..

Syntax:

```
function_name(object_name);
```

The data members of the calling object can be directly accessed inside the function without using the object name and the dot operator.

Code 2

ARRAY OF POINTER TO OBJECT

➤An **array of pointers** is an **array** that consists of variables of **pointer** type, which means that the variable is a **pointer** addressing to some other element

➤Suppose we create an **array of pointer** holding 5 integer **pointers**; then its declaration would look like: int *ptr[5]; // **array** of 5 integer **pointer**.

CODE : 6

Friend Class

Friendship is not inherited

Like friend class, a friend function can be given a special grant to access private and protected members.

Code 4

The concept of friends is not there in Java.

Friendship is not mutual. If class A is a friend of B, then B doesn't become a friend of A automatically.

Class A friend class can access private and protected members of other class in which it is declared as friend.

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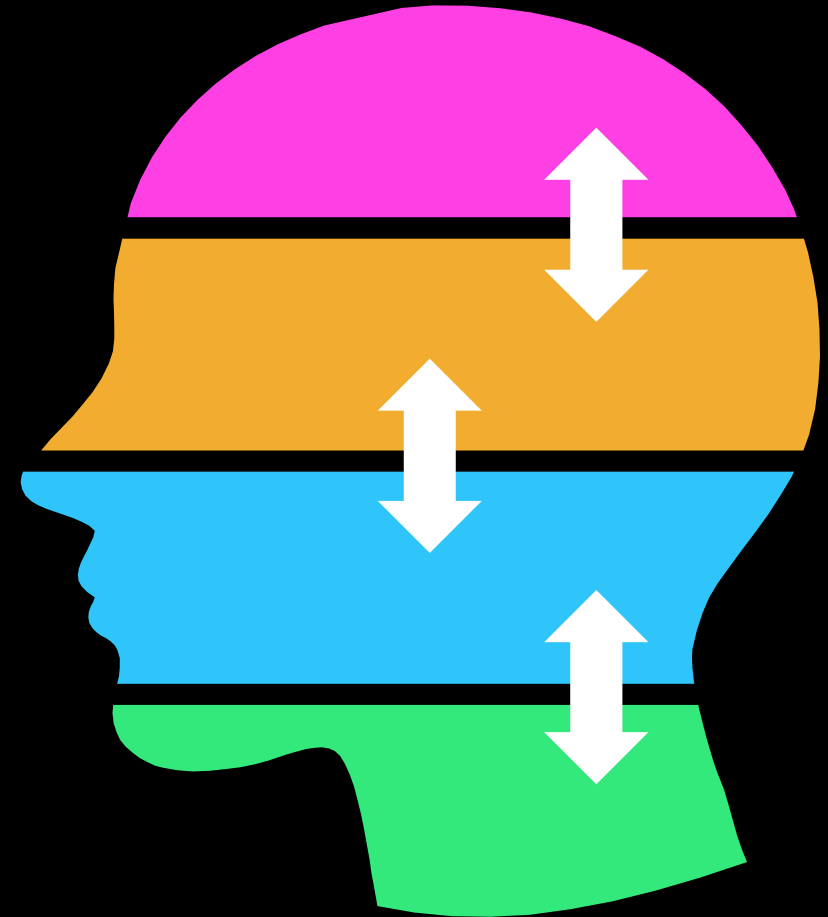
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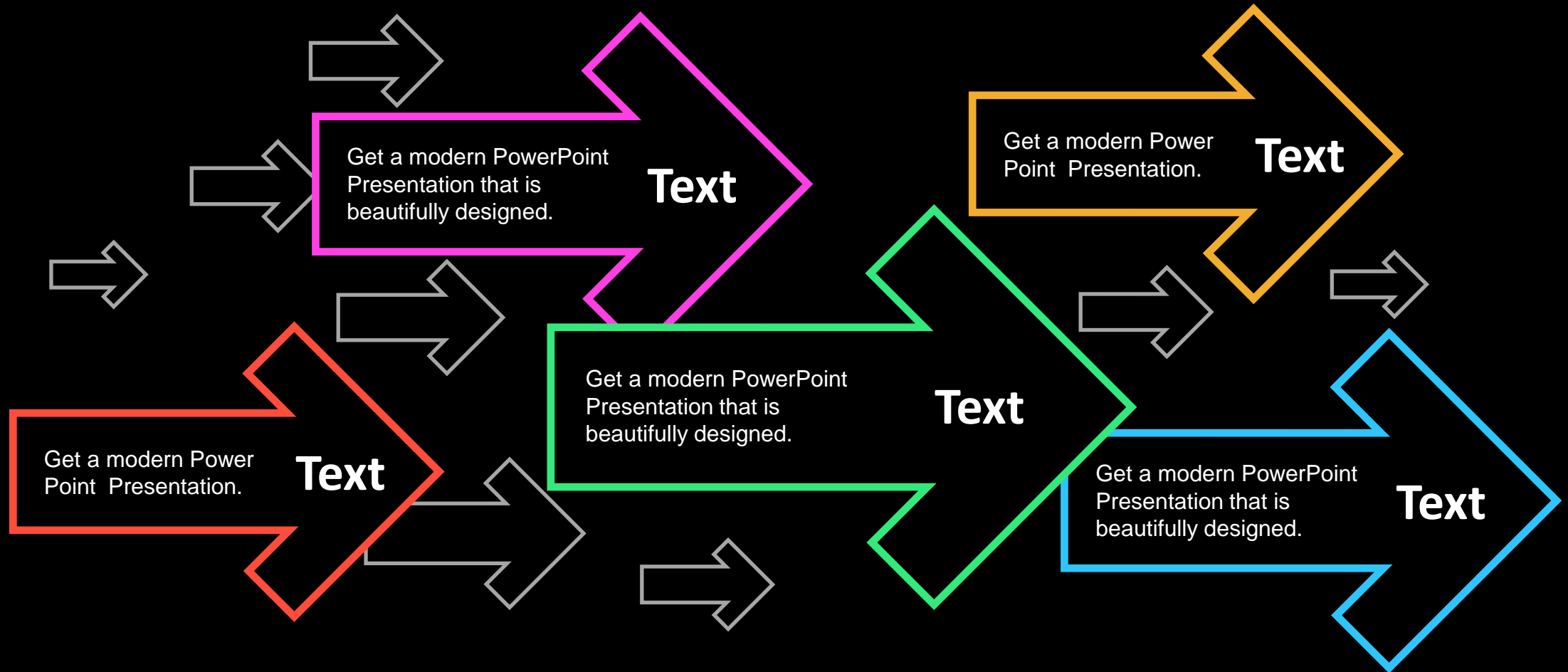
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Passing an Object as Argument

```
1    //CODE 2: Passing an Object as argument
2    #include <iostream>
3    using namespace std;
4    class A {
5    public:
6        int n=100;
7        char ch='A';
8        void disp(A a){        //created a function disp()
9            cout<<a.n<<endl;
10           cout<<a.ch<<endl;
11       }
12   };
13   int main() {
14       A obj;
15       obj.disp(obj);         //passed object as arguement
16       return 0;
17   }
18
19
20
21
22
23
```

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```
100
A

----------------------------------
Process exited after 1.074 seconds with return value 0
Press any key to continue . . . _
```

Code 2

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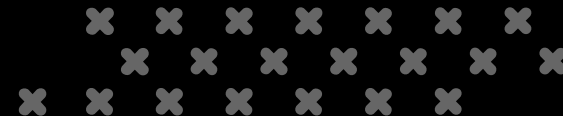
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Accessing Data Members and Member Functions

◆ The data members and member functions of class can be accessed using the dot('.') operator with the object.

◆ For example if the name of object is *obj* and you want to access the member function with the name *printName()* then you will have to write *obj.printName()* .

◆ This access control is given by Access modifiers in C++. There are three access modifiers : **public, private and protected**

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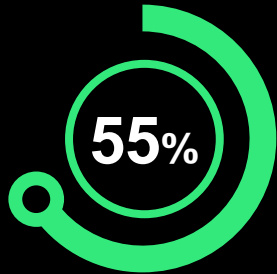
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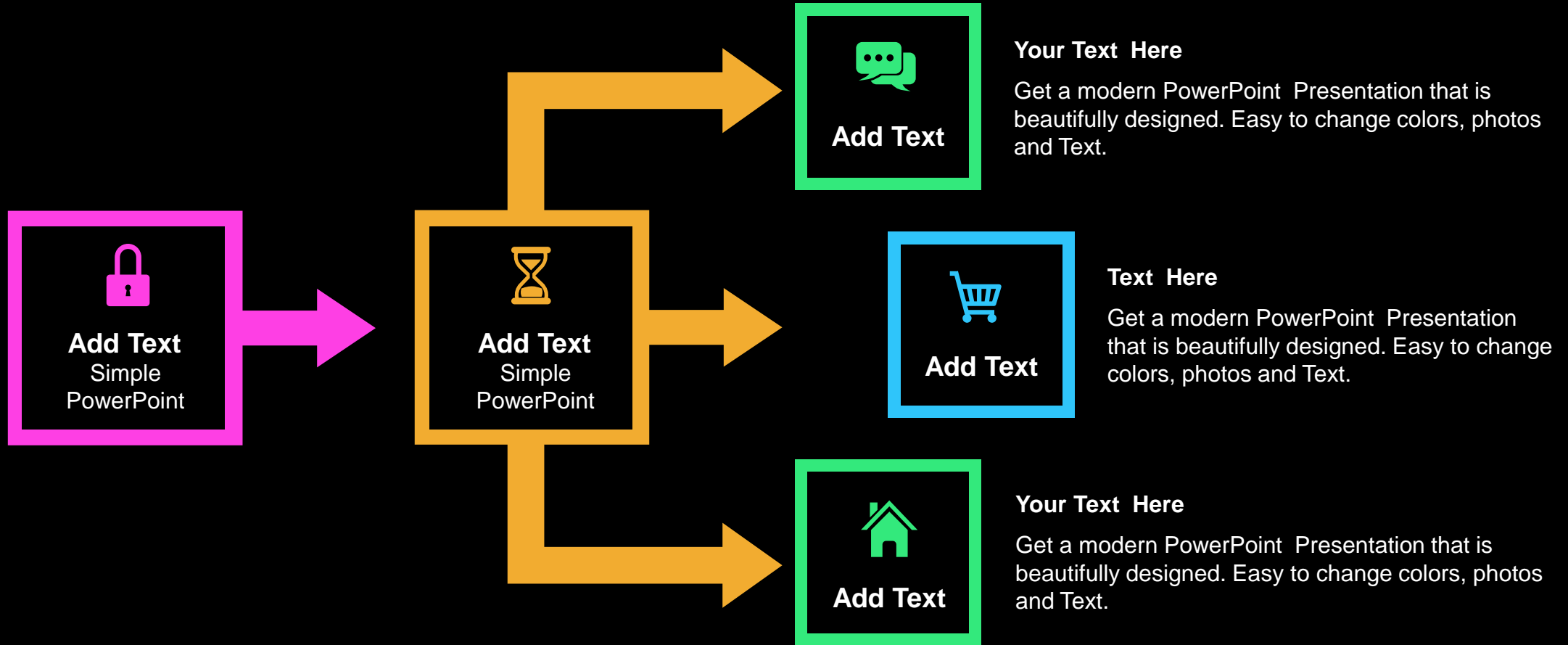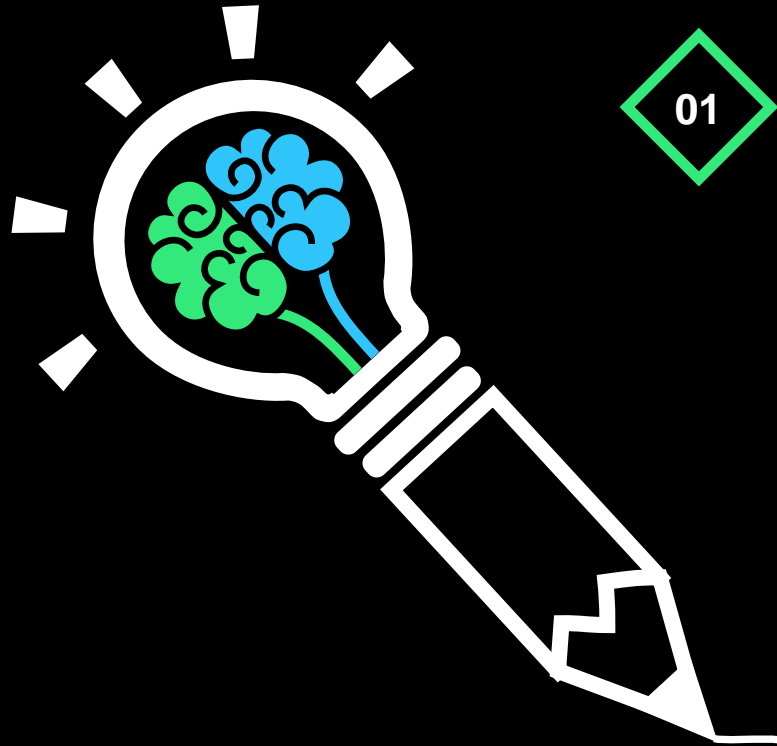
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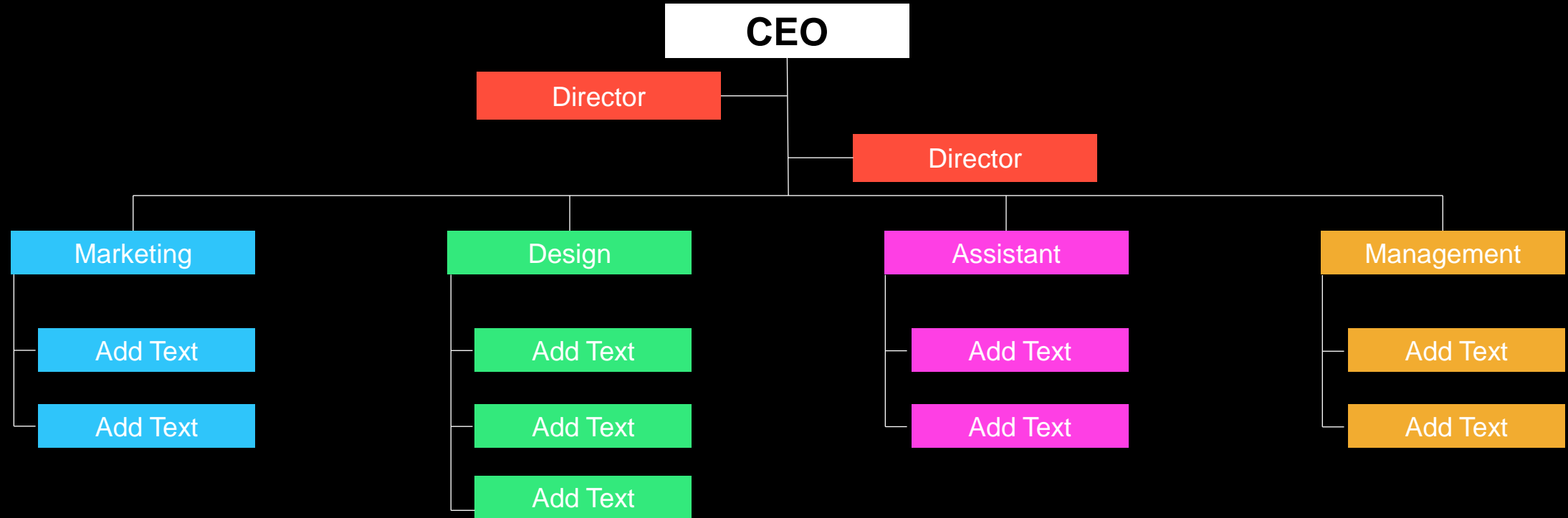
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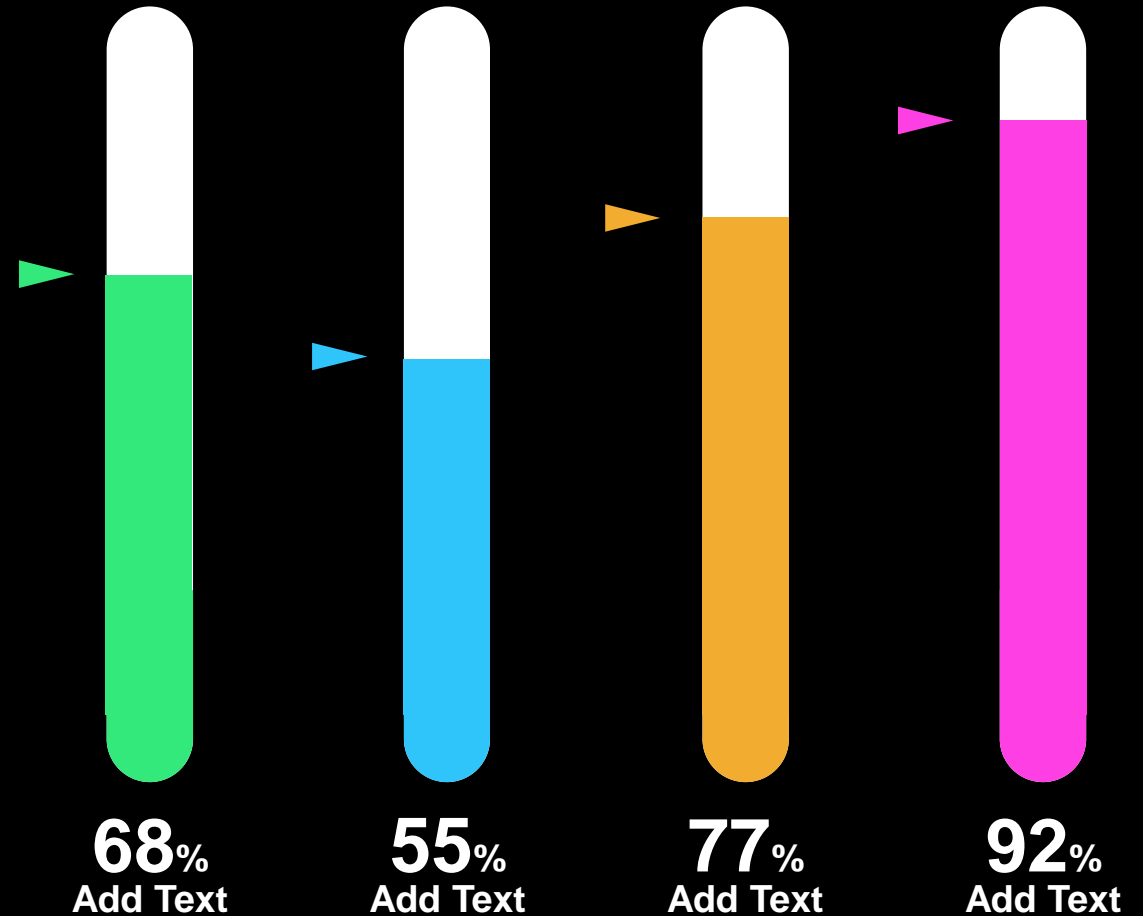**Content Here** : I hope and I believe that this Template will your Time.

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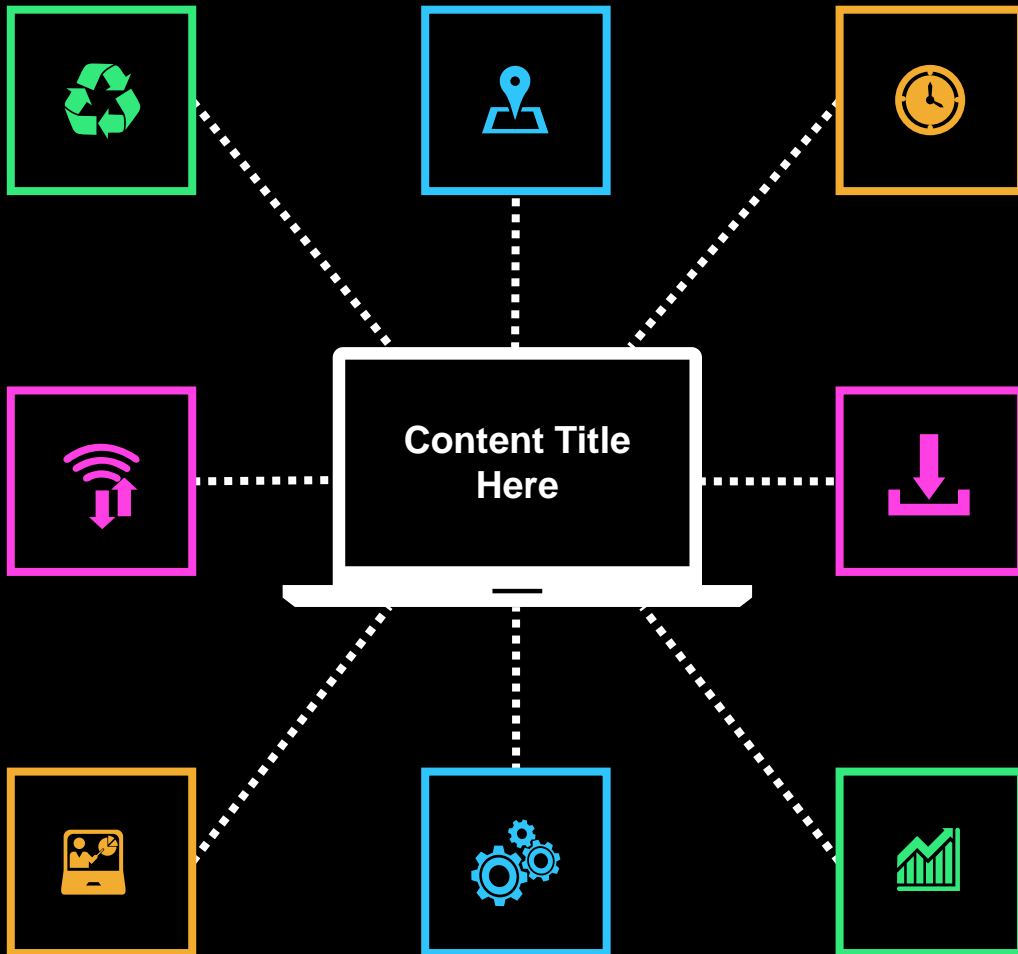You can simply impress your audience and add a unique zing and appeal to your Presentations.

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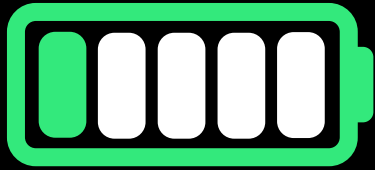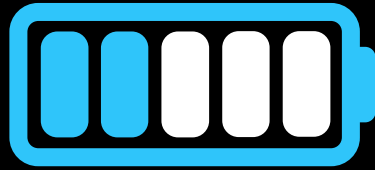
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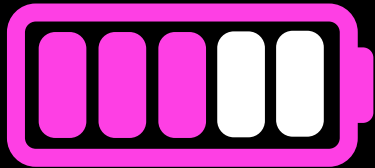
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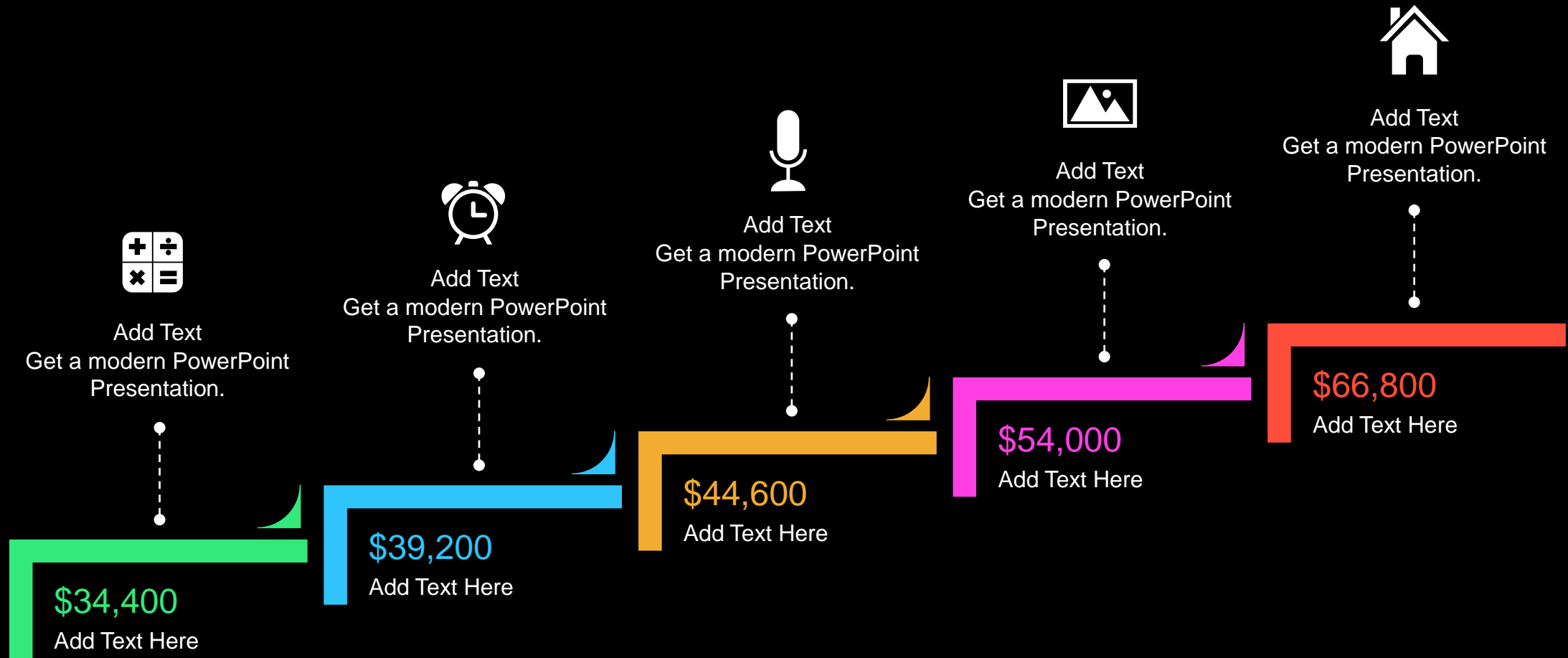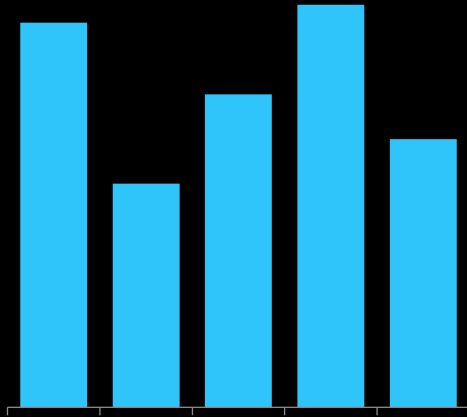
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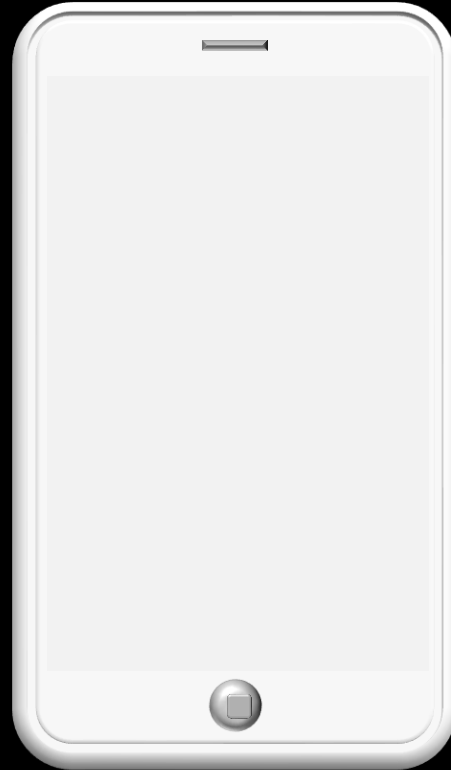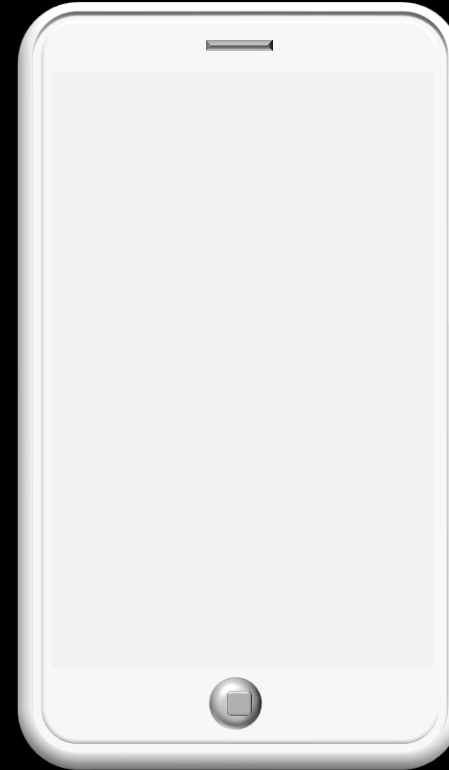
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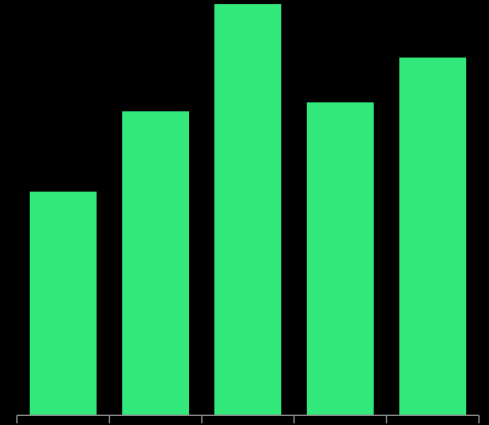
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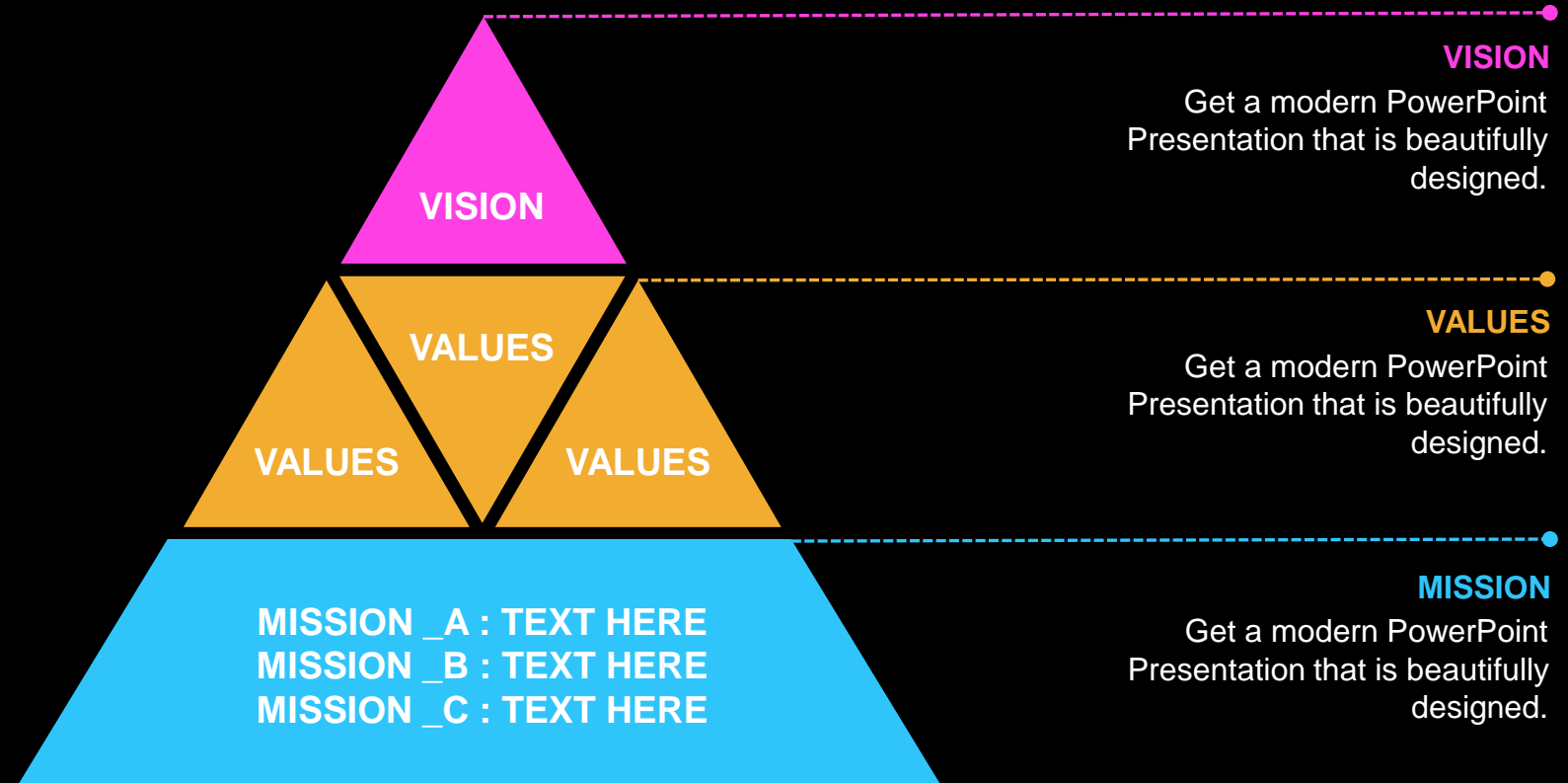
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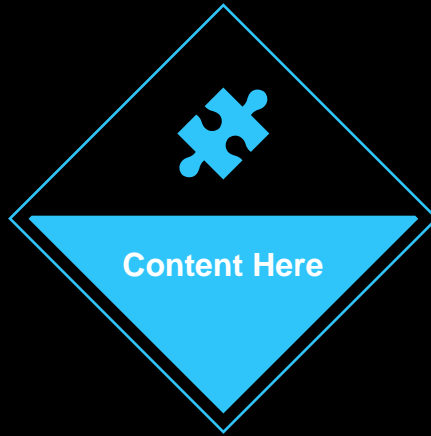Content Here

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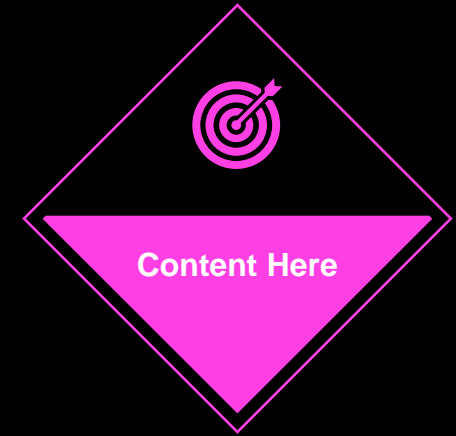
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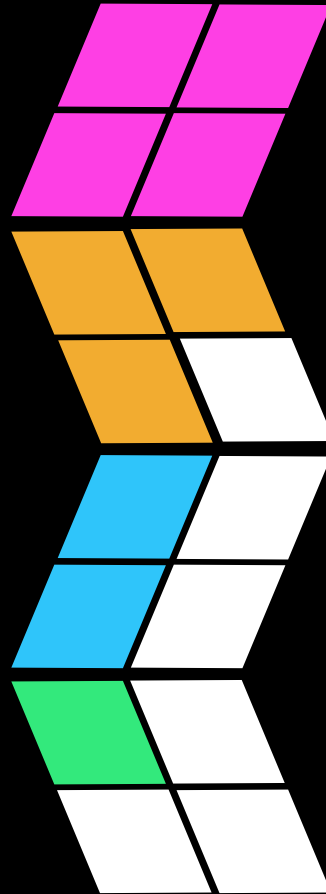
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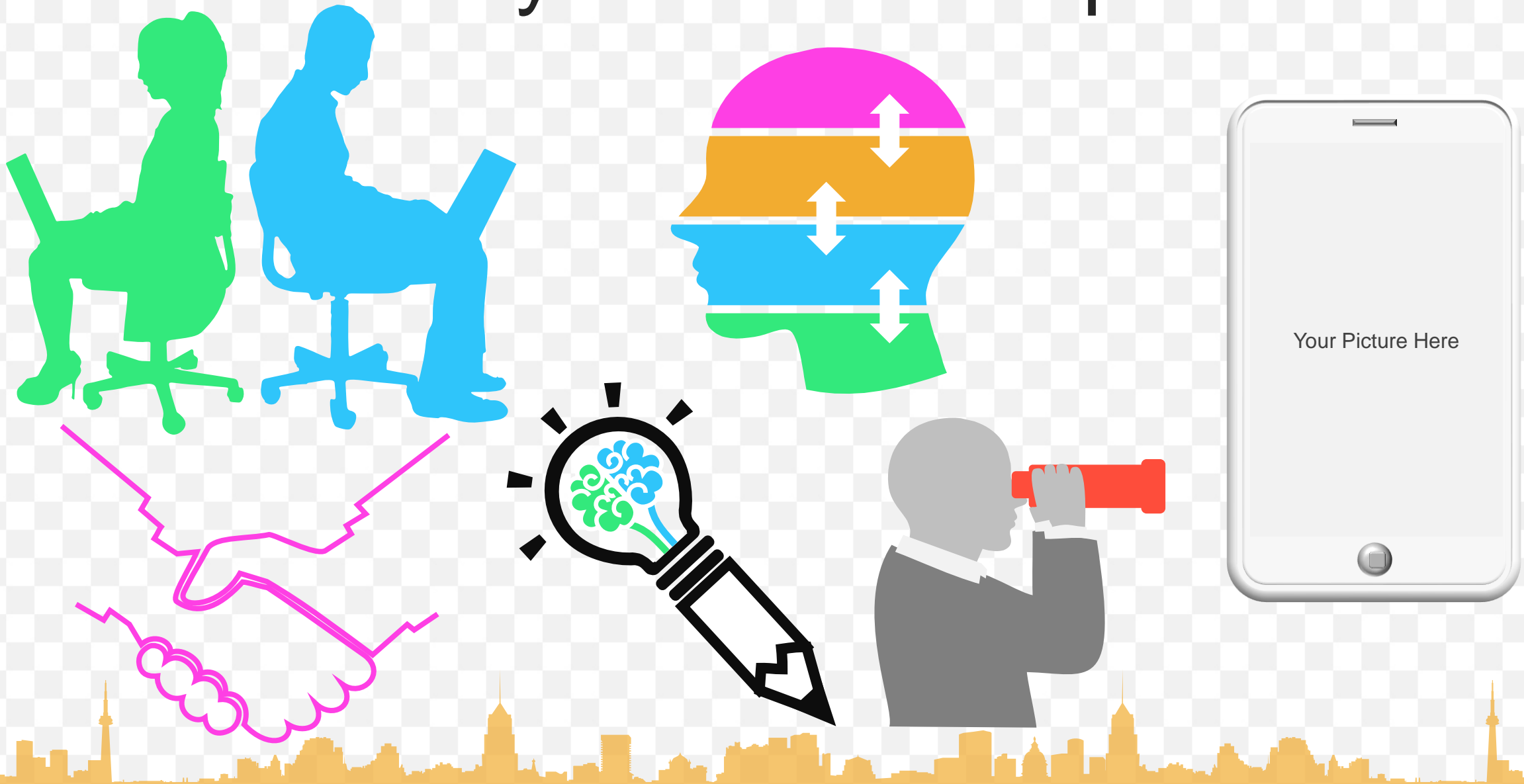
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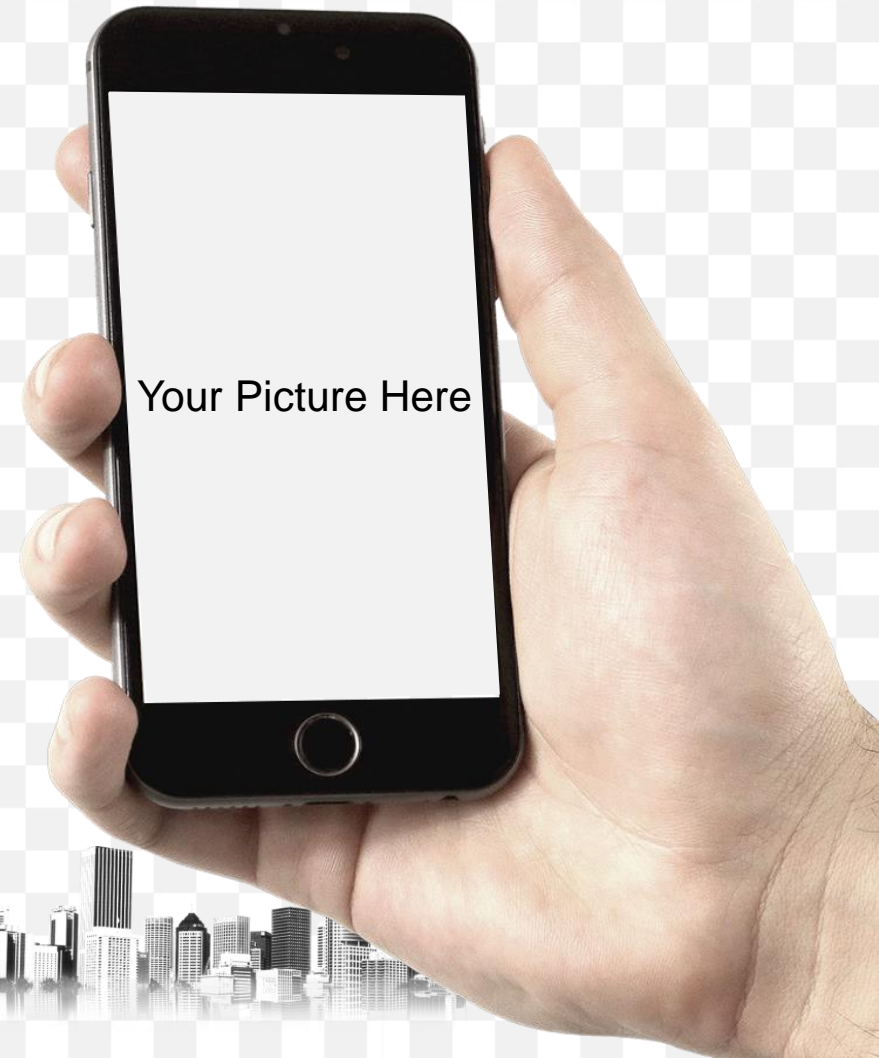
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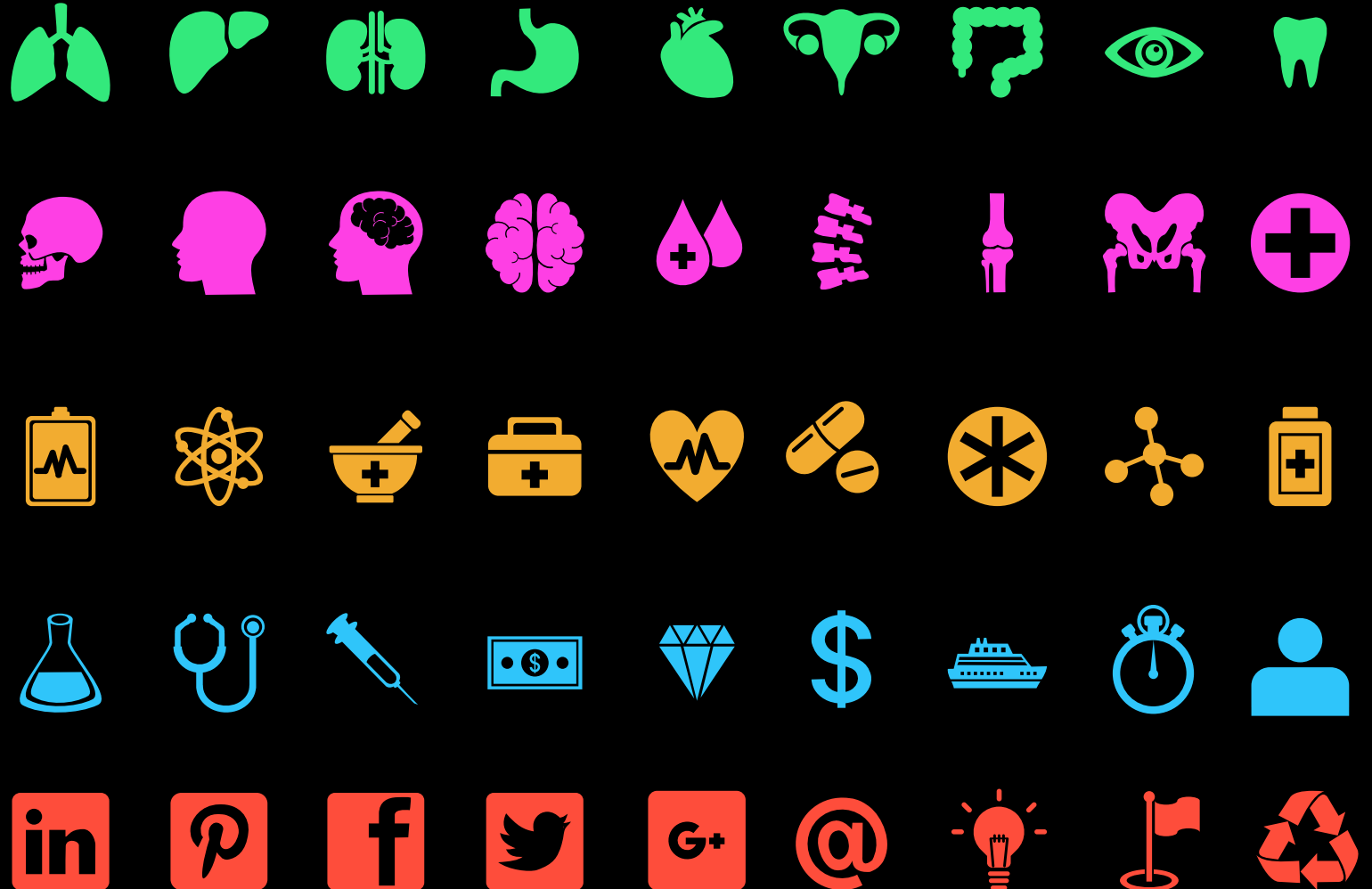
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