

1- Write a program to print numbers from 1 to N using recursion.

اكتب برنامجًا لطباعة الأرقام من 1 إلى N باستخدام recursion.

Input

```
Enter a number: 5
```

Output

```
Numbers from 1 to 5: 1 2 3 4 5
```

Solution

```
// www.gammal.tech

#include <iostream>
using namespace std;

void printNumbers(int n) {
    if (n > 0) {
        printNumbers(n - 1);
        cout << n << " ";
    }
}

int main() {
    int num;
    cout << "Enter a number: ";
    cin >> num;

    cout << "Numbers from 1 to " << num << ": ";
    printNumbers(num);
    cout << endl;

    return 0;
}
```

2- Write a program that takes an integer input 'num' from the user and prints the numbers from 'num' to 1 in decreasing order. using recursion.

اكتب برنامجًا يأخذ عددًا صحيحًا "num" من المستخدم ويطبع الأرقام من "num" إلى 1 بترتيب تنازلي. using recursion.

Input

Enter a number: 5

Output

Numbers from 5 to 1: 5 4 3 2 1

Solution

```
// www.gammal.tech

#include <iostream>
using namespace std;

// Function to print numbers from n to 1 recursively
void printNumbers(int n) {
    if (n > 0) {
        cout << n << " ";
        printNumbers(n - 1);
    }
}

int main() {
    int num;

    // Input: Get an integer from the user
    cout << "Enter a number: ";
    cin >> num;

    // Output: Display the numbers from N to 1
    cout << "Numbers from " << num << " to 1: ";
    printNumbers(num);
    cout << endl;

    return 0;
}
```

3- Write a program that takes an integer input 'num' from the user and prints the numbers from 'num' to -2 in decreasing order. using recursion

اكتب برنامجًا يأخذ عددًا صحيحًا "num" من المستخدم ويطبع الأرقام من "num" إلى -2 بترتيب تنازلي. using recursion.

Input

```
Enter a number: 5
```

Output

```
Numbers from 5 to -2: 5 4 3 2 1 0 -1 -2
```

Solution

```
// www.gammal.tech

#include <iostream>
using namespace std;

// Function to print numbers from n to -2 recursively
void printNumbers(int n) {
    if (n > -3) {
        cout << n << " ";
        printNumbers(n - 1);
    }
}

int main() {
    int num;

    // Input: Get an integer from the user
    cout << "Enter a number: ";
    cin >> num;

    // Output: Display the numbers from N to -2
    cout << "Numbers from " << num << " to -2: ";
    printNumbers(num);
    cout << endl;

    return 0;
}
```

4- Write a program that takes an integer input 'num' from the user and prints the numbers from 'num' to -2 in decreasing order, excluding zero. using recursion

اكتب برنامجًا يأخذ عددًا صحيحًا "num" من المستخدم ويطبّع الأرقام من "num" إلى -2 بترتيب تنازلي، باستثناء الصفر. using recursion

Input

```
Enter a number: 3
```

Output

```
Numbers from 3 to -2 (excluding zero): 3 2 1 -1 -2
```

Solution

```
// www.gammal.tech

#include <iostream>
using namespace std;

// Function to print numbers from n to -2 excluding zero recursively
void printNumbers(int n) {
    if (n > -3) {
        if (n != 0)
            cout << n << " ";
        printNumbers(n - 1);
    }
}

int main() {
    int num;

    // Input: Get an integer from the user
    cout << "Enter a number: ";
    cin >> num;

    // Output: Display the numbers from N to -2 excluding zero
    cout << "Numbers from " << num << " to -2 (excluding zero): ";
    printNumbers(num);
    cout << endl;

    return 0;
}
```

5- Create a program that prompts the user to enter an integer 'num' and then prints the even numbers from 'num' to 1 in decreasing order. using recursion

قم بإنشاء برنامج يطلب من المستخدم إدخال عدد صحيح "num" ثم طباعة الأرقام الزوجية من "num" إلى 1 بترتيب تنازلي. using recursion.

Input

```
Enter a number: 7
```

Output

```
Even numbers from 7 to 1: 6 4 2
```

Solution

```
// www.gammal.tech

#include <iostream>
using namespace std;

// Function to print even numbers from n to 1 recursively
void printNumbers(int n) {
    if (n > 0) {
        if (n % 2 == 0)
            cout << n << " ";
        printNumbers(n - 1);
    }
}

int main() {
    int num;

    // Input: Get an integer from the user
    cout << "Enter a number: ";
    cin >> num;

    // Output: Display even numbers from N to 1
    cout << "Even numbers from " << num << " to 1: ";
    printNumbers(num);
    cout << endl;

    return 0;
}
```

6- Write a program that takes an integer input 'num' from the user and prints the numbers from -2 to 'num' in ascending order. using recursion

اكتب برنامجًا يأخذ عددًا صحيحًا "num" من المستخدم ويطبع الأرقام من -2 إلى "num" بترتيب تصاعدي. using recursion

Input

```
Enter a number: 3
```

Output

```
Numbers from -2 to 3: -2 -1 0 1 2 3
```

Solution

```
// www.gammal.tech

#include <iostream>
using namespace std;

// Function to print numbers from -2 to n recursively
void printNumbers(int n) {
    if (n > -3) {
        printNumbers(n - 1);
        cout << n << " ";
    }
}

int main() {
    int num;

    // Input: Get an integer from the user
    cout << "Enter a number: ";
    cin >> num;

    // Output: Display numbers from -2 to N
    cout << "Numbers from -2 to " << num << ": ";
    printNumbers(num);
    cout << endl;

    return 0;
}
```

7- Write a program that prompts the user to enter an integer 'num' and then prints the numbers from -2 to 'num' in ascending order, excluding zero.

اكتب برنامجًا يطلب من المستخدم إدخال عدد صحيح "num" ثم يطبع الأرقام من -2 إلى "num" بترتيب تصاعدي، باستثناء الصفر.

Input

```
Enter a number: 3
```

Output

```
Numbers from -2 to 3 (excluding zero): -2 -1 1 2 3
```

Solution

```
// www.gammal.tech

#include <iostream>
using namespace std;

// Function to print numbers from -2 to n excluding zero recursively
void printNumbers(int n) {
    if (n > -3) {
        printNumbers(n - 1);
        if (n != 0)
            cout << n << " ";
    }
}

int main() {
    int num;

    // Input: Get an integer from the user
    cout << "Enter a number: ";
    cin >> num;

    // Output: Display numbers from -2 to N excluding zero
    cout << "Numbers from -2 to " << num << " (excluding zero): ";
    printNumbers(num);
    cout << endl;

    return 0;
}
```

8- Write a program that prompts the user to enter an integer 'num' and then prints the even numbers from 1 to 'num' in ascending order.

اكتب برنامجًا يطلب من المستخدم إدخال عدد صحيح "num" ثم طباعة الأعداد الزوجية من 1 إلى "num" بترتيب تصاعدي.

Input

```
Enter a number: 7
```

Output

```
Even numbers from 1 to 7: 2 4 6
```

Solution

```
// www.gammal.tech

#include <iostream>
using namespace std;

// Function to print even numbers from 1 to n recursively
void printNumbers(int n) {
    if (n > 0) {
        printNumbers(n - 1);
        if (n % 2 == 0)
            cout << n << " ";
    }
}

int main() {
    int num;

    // Input: Get an integer from the user
    cout << "Enter a number: ";
    cin >> num;

    // Output: Display even numbers from 1 to N
    cout << "Even numbers from 1 to " << num << ": ";
    printNumbers(num);
    cout << endl;

    return 0;
}
```

9- Write a program that prompts the user to enter an integer 'num' and then prints the odd numbers from 1 to 'num' in ascending order.

اكتب برنامجًا يطلب من المستخدم إدخال عدد صحيح "num" ثم طباعة الأرقام الفردية من 1 إلى "num" بترتيب تصاعدي.

Input

```
Enter a number: 8
```

Output

```
Odd numbers from 1 to 8: 1 3 5 7
```


Solution

```
// www.gammal.tech

#include <iostream>
using namespace std;

// Function to print odd numbers from 1 to n recursively
void printNumbers(int n) {
    if (n > 0) {
        printNumbers(n - 1);
        if (n % 2 != 0)
            cout << n << " ";
    }
}

int main() {
    int num;

    // Input: Get an integer from the user
    cout << "Enter a number: ";
    cin >> num;

    // Output: Display odd numbers from 1 to N
    cout << "Odd numbers from 1 to " << num << ": ";
    printNumbers(num);
    cout << endl;

    return 0;
}
```

10- Write a program that prompts the user to enter an integer 'num' and then prints the odd numbers from 'num' to 1 in decreasing order.

اكتب برنامجًا يطلب من المستخدم إدخال عدد صحيح "num" ثم طباعة الأرقام الفردية من "num" إلى 1 بترتيب تنازلي.

Input

```
Enter a number: 8
```

Output

```
Odd numbers from 8 to 1: 7 5 3 1
```

Solution

```

// www.gammal.tech

#include <iostream>
using namespace std;

// Function to print odd numbers from n to 1 recursively
void printNumbers(int n) {
    if (n > 0) {
        if (n % 2 != 0)
            cout << n << " ";
        printNumbers(n - 1);
    }
}

int main() {
    int num;

    // Input: Get an integer from the user
    cout << "Enter a number: ";
    cin >> num;

    // Output: Display odd numbers from N to 1
    cout << "Odd numbers from " << num << " to 1: ";
    printNumbers(num);
    cout << endl;

    return 0;
}
```
