**Exercise No 1**

Name:Snehal Gadave

Student Id : 200240520098

Center : Juhu

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WAP to Check Prime Number using loop?

//C++ : check if number is prime

#include<iostream>

using namespace std;

int main(){

int n,i=2;

cin>>n;

while(i<=n/2){

if(n%i==0)

break;

i++;

}

if(i<=n/2)

cout<<"Not Prime"<<endl;

else

cout<<"Prime"<<endl;

return 0;

}

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1. WAP to Check if a Number is Positive or Negative

#include<iostream>

using namespace std;

int main ()

{

int num;

cout<< "Enter the number to be checked : ";

cin>>num;

if (num>= 0)

cout<<num<< " is a positive number.";

else

cout<<num<< " is a negative number.";

return 0;

}

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1. WAP to Find Factorial of a number

#include <iostream>

using namespace std;

int main()

{

int i,fact=1,number;

cout<<"Enter any Number: ";

cin>>number;

for(i=1;i<=number;i++){

fact=fact\*i;

}

cout<<"Factorial of " <<number<<" is: "<<fact<<endl;

return 0;

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1. WAP to Display Fibonacci series

#include <iostream>

using namespace std;

int main() {

int n1=0,n2=1,n3,i,number;

cout<<"Enter the number of elements: ";

cin>>number;

cout<<n1<<" "<<n2<<" ";

for(i=2;i<number;++i)

{

n3=n1+n2;

cout<<n3<<" ";

n1=n2;

n2=n3;

}

return 0;

}

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5. WAP to Display Fibonacci series up to a given

number (instead of terms)

Input: 20

Output:0 + 1 + 1 + 2 + 3 + 5 + 8 + 13

#include<iostream>

using namespace std;

int main()

{

int limit, first=0, second=1, next, num;

cout<<"Enter the limit of Fibonacci series"<<endl;

cin>>num;

for(int p=0;p<num;p++)

{

if (p <= 1)

next = p;

else

{

next = first + second;

first = second;

second = next;

}

cout<<next<<" ";

}

return 0;

}

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1. WAP to Display Uppercased A to Z

void uppercaseAlphabets()

{

for (char c = 'A'; c <= 'Z'; ++c)

cout<< c << " ";

cout<<endl;

}

int main()

{

cout<< "Uppercase Alphabets" <<endl;

uppercaseAlphabets(ch);

cout<< "Lowercase Alphabets " <<endl;

lowercaseAlphabets(ch);

return 0;

}

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1. WAP to Swap two numbers using temporary variable

#include <iostream>

using namespace std;

int main()

{

int a = 5, b = 10, temp;

cout<<"Before swapping."<<endl;

cout<<"a ="<<a<<",b ="<<b<<endl;

temp = a;

a = b;

b = temp;

cout<< "\nAfter swapping." <<endl;

cout<< "a = "<< a << ", b = "<< b <<endl;

return 0;

}

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8. WAP to Swap two numbers without using temporary

Variable

#include <iostream>

using namespace std;

int main()

{

int a=5, b=10;

cout<<"Before swap a= "<<a<<" b= "<<b<<endl;

a=a\*b;

b=a/b;

a=a/b;

cout<<"After swap a= "<<a<<" b= "<<b<<endl;

return 0;

}

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9. WAP to Check whether an alphabet is vowel or

Consonant

#include <iostream>

using namespace std;

int main()

{

char c;

int isLowercaseVowel, isUppercaseVowel;

cout<< "Enter an alphabet: ";

cin>> c;

isLowercaseVowel = (c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u');

isUppercaseVowel = (c == 'A' || c == 'E' || c == 'I' || c == 'O' || c == 'U');

if (isLowercaseVowel || isUppercaseVowel)

cout<< c << " is a vowel.";

else

cout<< c << " is a consonant.";

return 0;

}

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10. WAP to Find the largest number among the given

Numbers

#include <iostream>

using namespace std;

int main()

{

int a=3,b=4,c=10;

if(a>b && a>c){

cout<<"is greatest among three numbers"<<a;

}

else if(b>a && b>c){

cout<<"is greatest among three numbers"<<b;

}

else if(c>a && c>b){

cout<< "is greatest among three numbers"<<c;

}

return 0;

}

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11. WAP to Reverse a Number

#include <iostream>

using namespace std;

int main() {

int n, reversedNumber = 0, remainder;

cout<< "Enter an integer:";

cin>> n;

while(n != 0) {

remainder = n%10;

reversedNumber = reversedNumber\*10 + remainder;

n /= 10;

}

cout<< "Reversed Number ="<<reversedNumber;

return 0;

}

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12. WAP to Program to Check Palindrome

#include <iostream>

using namespace std;

int main()

{

int n,r,sum=0,temp;

cout<<"Enter the Number=";

cin>>n;

temp=n;

while(n>0)

{

r=n%10;

sum=(sum\*10)+r;

n=n/10;

}

if(temp==sum)

cout<<"Number is Palindrome.";

else

cout<<"Number is not Palindrome.";

return 0;

}

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14. WAP to Display Prime Numbers Between two

Intervals

#include <iostream>

using namespace std;

int main() {

int low, high, i;

bool isPrime = true;

cout<< "Enter two numbers (intervals): ";

cin>> low >> high;

cout<< "\nPrime numbers between " << low << " and " << high << " are: " <<endl;

while (low < high) {

isPrime = true;

if (low == 0 || low == 1) {

isPrime = false;

}

else {

for (i = 2; i<= low / 2; ++i) {

if (low % i == 0) {

isPrime = false;

break;

}

}

}

if (isPrime)

cout<< low << " ";

++low;

}

return 0;

}

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15. WAP to Check Armstrong Number for 3 digit

Number

#include <iostream>

using namespace std;

int main() {

int num, originalNum, remainder, result = 0;

cout<< "Enter a three-digit integer: ";

cin>>num;

originalNum = num;

while (originalNum != 0) {

remainder = originalNum % 10;

result += remainder \* remainder \* remainder;

originalNum /= 10;

}

if (result == num)

cout<<num<< " is an Armstrong number.";

else

cout<<num<< " is not an Armstrong number.";

return 0;

}

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16. WAP to Check Armstrong Number for n digit

Number

#include <cmath>

#include <iostream>

using namespace std;

int main() {

int num, originalNum, remainder, n = 0, result = 0, power;

cout<< "Enter an integer: ";

cin>>num;

originalNum = num;

while (originalNum != 0) {

originalNum /= 10;

++n;

}

originalNum = num;

while (originalNum != 0) {

remainder = originalNum % 10;

power = round(pow(remainder, n));

result += power;

originalNum /= 10;

}

if (result == num)

cout<<num<< " is an Armstrong number.";

else

cout<<num<< " is not an Armstrong number.";

return 0;

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17. WAP to Armstrong Numbers Between Two

Integers

#include <stdio.h>

#include <math.h>

int main() {

int low = 100;

int high = 400;

printf("The amstrong numbers between %d and %d is \n",low,high);

for (int i = low+1; i< high; ++i) {

int x = i;

int n = 0;

while (x != 0) {

x /= 10;

++n;

}

int pow\_sum = 0;

x = i;

while (x != 0) {

int digit = x % 10;

pow\_sum += pow(digit, n);

x /= 10;

}

if (pow\_sum == i)

printf("%d ", i);

}

printf("\n");

return 0;

}

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18. WAP to Prime Numbers Between Two Integers

#include <iostream>

using namespace std;

int checkPrimeNumber(int);

int main() {

int n1, n2;

bool flag;

cout<< "Enter two positive integers: ";

cin>> n1 >> n2;

if (n1 > n2) {

n2 = n1 + n2;

n1 = n2 - n1;

n2 = n2 - n1;

}

cout<< "Prime numbers between " << n1 << " and " << n2 << " are: ";

for(int i = n1+1; i< n2; ++i) {

flag = checkPrimeNumber(i);

if(flag)

cout<<i<< " ";

}

return 0;

}

int checkPrimeNumber(int n) {

bool isPrime = true;

if (n == 0 || n == 1) {

isPrime = false;

}

else {

for(int j = 2; j <= n/2; ++j) {

if (n%j == 0) {

isPrime = false;

break;

}

}

}

return isPrime;

}

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19. WAP to Represent a number as Sum of Two Prime

Numbers

Input: 34 Output: 34 = 3 + 31, 34 = 5 + 29, 34 = 11 +

23, 34 = 17 + 17

#include <iostream>

using namespace std;

int checkPrime(int n);

int main() {

int n, i, flag = 0;

cout<<"Enter a positive integer";

cin>>n;

for (i = 2; i<= n / 2; ++i) {

if (checkPrime(i) == 1) {

if (checkPrime(n - i) == 1) {

printf("%d = %d + %d\n", n, i, n - i);

flag = 1;

}

}

}

if (flag == 0)

cout<<" cannot be expressed as the sum of two prime numbers."<< n;

return 0;

}

int checkPrime(int n) {

int i, isPrime = 1;

for (i = 2; i<= n / 2; ++i) {

if (n % i == 0) {

isPrime = 0;

break;

}

}

return isPrime;

}

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20. WAP to Convert Decimal to Octal

#include <iostream>

using namespace std;

int decimalToOctal(int decimalnum)

{

int octalnum = 0, temp = 1;

while (decimalnum != 0)

{

octalnum = octalnum + (decimalnum % 8) \* temp;

decimalnum = decimalnum / 8;

temp = temp \* 10;

}

return octalnum;

}

int main()

{

int decimalnum;

cout<<"Enter a Decimal Number";

cin>>decimalnum;

cout<<"Equivalent Octal Number"<<decimalToOctal(decimalnum);

return 0;

}

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21. WAP to Convert Octal to Decimal

#include <iostream>

using namespace std;

int main()

{

long int octal, decimal = 0;

int i = 0;

cout<<"Enter any octal number";

cin>>octal;

while (octal != 0)

{

decimal = decimal +(octal % 10)\* pow(8, i++);

octal = octal / 10;

}

cout<<"Equivalent decimal value:"<<decimal;

return 0;

}

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22. WAP to convert binary number to decimal

#include <iostream>

using namespace std;

int convert(long long n);

int main() {

long long n;

cout<<"Enter a binary number:";

cin>>n;

printf("%lld in binary = %d in decimal", n, convert(n));

return 0;

}

int convert(long long n) {

int dec = 0, i = 0, rem;

while (n != 0) {

rem = n % 10;

n /= 10;

dec += rem \* pow(2, i);

++i;

}

return dec;

}

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23. WAP to convert decimal number to binary

#include <iostream>

using namespace std;

void decToBinary(int n)

{

int binaryNum[32];

int i = 0;

while (n > 0) {

binaryNum[i] = n % 2;

n = n / 2;

i++;

}

for (int j = i - 1; j >= 0; j--)

cout<<binaryNum[j];

}

int main()

{

int n = 17;

decToBinary(n);

return 0;

}

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24. WAP to Factorial of a Number Using Recursion

#include<stdio.h>

using namespace std;

long int multiplyNumbers(int n);

int main() {

int n;

printf("Enter a positive integer: ");

scanf("%d",&n);

printf("Factorial of %d = %ld", n, multiplyNumbers(n));

return 0;

}

long int multiplyNumbers(int n) {

if (n>=1)

return n\*multiplyNumbers(n-1);

else

return 1;

}

25. WAP to Convert Decimal to Octal

#include <iostream>

using namespace std;

void decToOctal(int n)

{

int octalNum[100];

int i = 0;

while (n != 0) {

octalNum[i] = n % 8;

n = n / 8;

i++;

}

for (int j = i - 1; j >= 0; j--)

cout<<octalNum[j];

}

int main()

{

int n = 33;

decToOctal(n);

return 0;

}

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26. WAP to Convert Binary to Octal

#include <stdio.h>

using namespace std;

int main()

{

long int binarynum, octalnum = 0, j = 1, remainder;

printf("Enter the value for binary number: ");

scanf("%ld", &binarynum);

while (binarynum != 0)

{

remainder = binarynum % 10;

octalnum = octalnum + remainder \* j;

j = j \* 2;

binarynum = binarynum / 10;

}

printf("Equivalent octal value: %lo", octalnum);

return 0;

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27. WAP to Convert Octal to Binary

#include <stdio.h>

#include <math.h>

long octalToBinary(int octalnum)

{

int decimalnum = 0, i = 0;

long binarynum = 0;

while(octalnum != 0)

{

decimalnum = decimalnum + (octalnum%10) \* pow(8,i);

i++;

octalnum = octalnum / 10;

}

i = 1;

while (decimalnum != 0)

{

binarynum = binarynum + (decimalnum % 2) \* i;

decimalnum = decimalnum / 2;

i = i \* 10;

}

return binarynum;

}

int main()

{

int octalnum;

printf("Enter an octal number: ");

scanf("%d", &octalnum);

printf("Equivalent binary number is: %ld", octalToBinary(octalnum));

return 0;

}

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28. WAP to Reverse a Sentence Using Recursion

Input : CDAC Mumbai

Output: iabmum CADC

#include <stdio.h>

using namespace std;

void reverseSentence();

int main() {

printf("Enter a sentence: ");

reverseSentence();

return 0;

}

void reverseSentence() {

char c;

scanf("%c", &c);

if (c != '\n') {

reverseSentence();

printf("%c", c);

}

}

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29. WAP to calculate power using recursion

#include <stdio.h>

using namespace std;

int power(int n1, int n2);

int main() {

int base, a, result;

printf("Enter base number: ");

scanf("%d", &base);

printf("Enter power number(positive integer): ");

scanf("%d", &a);

result = power(base, a);

printf("%d^%d = %d", base, a, result);

return 0;

}

int power(int base, int a) {

if (a != 0)

return (base \* power(base, a - 1));

else

return 1;

}

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30. WAP to Find the largest element in an array

Input: 89, 34 50, 23, 100, 39,455

Output: 455

#include <stdio.h>

using namespace std;

int main()

{

int size, i, largest;

printf("\n Enter the size of the array: ");

scanf("%d", &size);

int array[size];

printf("\n Enter %d elements of the array: \n", size);

for (i = 0; i< size; i++)

{

scanf("%d", &array[i]);

}

largest = array[0];

for (i = 1; i< size; i++)

{

if (largest < array[i])

largest = array[i];

}

printf("\n largest element present in the given array is : %d", largest);

return 0;

}

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