**Practical Number** 05

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Q1. #include <stdio.h>

Using while

int main() {

int i = 0;

while (i <= 100) {

printf("%d ", i);

i++;

}

return 0;

}

Using do-while loop:

#include <stdio.h>

int main() {

int i = 0;

do {

printf("%d ", i);

i++;

} while (i <= 100);

return 0;

}

Using loop

#include <stdio.h>

int main() {

int i;

for (i = 0; i <= 100; i++) {

printf("%d ", i);

}

return 0;

}

Q2. #include <stdio.h>

int main ()

{

int marks[10];

int i=0,total = 0;

float average

printf("Enter 10 marks:\n");

while (i < 10)

{

printf ("Mark %d:",i+1);

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

total += marks[i];

i++;

}

average = (float) total / 10.0;

printf ("Total: Sd\n", total);

printf ("Average: 8.2f\n", average) ;

if (average < 50.0)

printf ("Fail!\n");

else {

printf("Pass! \n");

}

return 0;

}

Q3.

#include <stdio.h>

int main() {

int number, i;

unsigned long long factorial = 1;

printf("Enter a number: ");

scanf("%d", &number);

// Calculate factorial

for (i = number; i >= 1; i--) {

factorial \*= i;

}

printf("Factorial of %d is %llu\n", number, factorial);

return 0;

}

Q4.

#include <stdio.h>

int main() {

int number, originalNumber, digit, sum = 0;

printf("Enter a number: ");

scanf("%d", &number);

originalNumber = number;

while (number != 0) {

digit = number % 10;

sum += digit;

number /= 10;

}

printf("Sum of digits of %d is: %d", originalNumber, sum);

return 0;

}

Q5.

#include <stdio.h>

int main() {

int number, reversedNumber = 0, remainder;

printf("Enter a number");

scanf("%d",&number);

do {

remainder = number % 10;

reversedNumber = reversedNumber \* 10 + remainder;

number /= 10;

} while (number != 0);

printf("Reversed number: %d/n", reversedNumber);

return 0;

}

Q6

#include <stdio.h>

int main() {

int base, exponent;

int result = 1;

printf("Enter the base: ");

scanf("%d", &base);

printf("Enter the exponent: ");

scanf("%d", &exponent);

for (int i = 0; i < exponent; i++) {

result \*= base;

}

printf("%d raised to the power of %d is: %d\n", base, exponent, result);

return 0;

}

Q7. #include <stdio.h>

int main() {

int num1 = 0, num2 = 1, next, count;

printf("First 10 numbers of the Fibonacci sequence:\n");

printf("%d\n%d\n", num1, num2);

for (count = 3; count <= 10; count++) {

next = num1 + num2;

printf("%d\n", next);

num1 = num2;

num2 = next;

}

return 0;

}

Q8.

#include <stdio.h>

int power(int base, int exponent) {

int result = 1;

while (exponent != 0) {

result \*= base;

--exponent;

}

return result;

}

int countDigits(int number) {

int count = 0;

while (number != 0) {

number /= 10;

++count;

}

return count;

}

int isArmstrong(int number) {

int originalNumber = number;

int digits = countDigits(number);

int result = 0;

while (originalNumber != 0) {

int remainder = originalNumber % 10;

result += power(remainder, digits);

originalNumber /= 10;

}

if (result == number)

return 1;

else

return 0;

}

int main() {

int number;

printf("Enter a number: ");

scanf("%d", &number);

if (isArmstrong(number))

printf("%d is an Armstrong number.\n", number);

else

printf("%d is not an Armstrong number.\n", number);

return 0;

}

Q9.

#include <stdio.h>

int main() {

char letter;

int i;

printf("ASCII values for letter A to Z: \n");

for (i = 65, letter = 'A'; i <= 90; i++,letter++) {

printf("%c: %d\n",letter,i);

}

}

Q10.

#include<stdio.h>

int main(){

int s,t,rows;

printf("Enter the number of rows");

scanf("%d", &rows) ;

for (s=1; s<= rows; s++) {

for (t= 1;t <= s;t++){

printf("\*");

}

printf("\n");

}

}

Q11.

#include<stdio.h>

int itprime (int num1){

if (num1<= 1){

return 0;

}

for (int s= 2; s \* s<= num1; s++){

if (num1 % s == 0){

return 0;

}

}

return 1;

}

int main(){

int num1;

printf("Enter a positive integer");

scanf("%d",&num1);

if (itprime(num1)){

printf("%d is a prime number.\n",num1);

}else {

printf("%d is not a prime number.\n",num1);

}

return 0;

}

Q12.

#include <stdio.h>

void printFactors(int num1) {

printf("Factors of %d are: ", num1);

for (int s = 1; s <= num1; s++) {

if (num1 % s == 0) {

printf("%d ", s);

}

}

printf("\n");

}

int main() {

int number;

printf("Enter an integer: ");

scanf("%d", &number);

printFactors(number);

return 0;

}

Q12.2

#include<stdio.h>

int main (){

int number1,sum = 0;

printf("Enter numbers to add (enter -1 to stop):\n");

while (1) {

scanf("%d",&number1);

if (number1 == -1) {

break;

}

sum += number1;

}

printf("The sum is: %d\n ",sum);

return 0;

}

Q13

#include <stdio.h>

#define SIZE 10

int main() {

int array[SIZE];

printf("Enter %d numbers:\n", SIZE);

for (int s = 0; s < SIZE; s++) {

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

}

printf("The array is: ");

for (int s = 0; s < SIZE; s++) {

printf("%d ", array[s]);

}

printf("\n");

return 0;

}

Q14.

#include <stdio.h>

#define SIZE 10

int main() {

int array[SIZE];

int count = 0;

printf("Enter %d numbers:\n", SIZE);

for (int s = 0; s < SIZE; s++) {

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

}

for (int s = 0; s < SIZE; s++) {

if (array[s] % 2 == 0) {

count++;

}

}

printf("The count of even numbers is: %d\n", count);

return 0;

}

Section B

// Task 1: Count positive, negative, and zero numbers

int main () {

int numbers[10];

int positiveCount = 0, negativeCount = 0, zeroCount = 0;

printf("Enter 10 numbers:\n");

for (int s = 0; s < 10; s++) {

scanf("%d", &numbers[s]);

if (numbers[s] > 0) {

positiveCount++;

} else if (numbers[s] < 0) {

negativeCount++;

} else {

zeroCount++;

}

}

printf("Positive numbers: %d\n", positiveCount);

printf("Negative numbers: %d\n", negativeCount);

printf("Zero numbers: %d\n", zeroCount);

}

// Task 2: Calculate maximum, minimum, and average marks

int main() {

int marks[10];

int maxMark, minMark;

float averageMark = 0;

printf("Enter marks of 10 students:\n");

for (int s = 0; s < 10; s++) {

scanf("%d", &marks[s]);

if (s == 0) {

maxMark = marks[s];

minMark = marks[s];

} else {

if (marks[s] > maxMark) {

maxMark = marks[s];

}

if (marks[s] < minMark) {

minMark = marks[s];

}

}

averageMark += marks[s];

}

averageMark /= 10;

printf("Maximum mark: %d\n", maxMark);

printf("Minimum mark: %d\n", minMark);

printf("Average mark: %.2f\n", averageMark);

return 0;

}

// Task 3: Calculate average price and count items with price > 200

int main() {

float prices[10];

float averagePrice = 0;

int count = 0;

printf("Enter price of 10 items:\n");

for (int s = 0; s < 10; s++) {

scanf("%f", &prices[s]);

averagePrice += prices[s];

if (prices[s] > 200) {

count++;

}

}

averagePrice /= 10;

printf("Average price: %.2f\n", averagePrice);

printf("Number of items with price > 200: %d\n", count);

}

// Task 4: Count employees with salary >= 5000

int main() {

int employeeNo;

float salary;

int count = 0;

printf("Enter employee number and salary (enter -999 to end):\n");

while (1) {

scanf("%d", &employeeNo);

if (employeeNo == -999) {

break;

}

scanf("%f", &salary);

if (salary >= 5000) {

count++;

}

}

printf("Number of employees with salary >= 5000: %d\n", count);

}

// Task 5: Calculate overtime payment and count employees with payment > 4000

#include <stdio.h>

int main () {

int employee\_number, work\_hours, overtime\_rate = 150;

int overtime\_rate\_excess = 200, counter;

int overtime\_payment, overtime\_exceed\_count = 0;

do {

printf("Employee number: ");

scanf("%d", &employee\_number);

if (employee\_number == -999) {

break;

}

printf("Work hours: ");

scanf("%d", &work\_hours);

if (work\_hours > 40) {

overtime\_payment = (40 \* overtime\_rate) + ((work\_hours - 40) \* overtime\_rate\_excess);

}

else {

overtime\_payment = work\_hours \* overtime\_rate;

}

if (overtime\_payment > 4000) {

overtime\_exceed\_count++;

}

printf("Employee No: %d\n", employee\_number);

printf("Overtime Payment: Rs. %d\n", overtime\_payment);

counter++;

} while (1);

float overtime\_exceed\_percentage = (float)overtime\_exceed\_count;

printf("Overtime payment exceeds employee percentage: %.2f\n", overtime\_exceed\_percentage);

return 0;

}