



Assignment 1

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1) Check if given number is even or odd

- 1) Start
- 5) 2) Read input number 'n'
- 3) if $n \% 2 == 0$ then number is even
- 9) else number is odd
- 5) Stop

10) 2) Algorithm for the factorial of given a number.

- 1) Start
- 2) Read input number n
- 15) 3) factorial of number n fact(n)
until $n = 1$
 $fact = fact * (n - 1)$
- 4) Output is fact
- 5) End program.

20) 3) Factorial of number using recursion

- 1) Start
- 2) Read number n
- 25) 3) Function factorial(n)
If $n = 1$; return 1
else $f = n * factorial(n - 1)$
Return f
- 4) Print value of f
- 5) End program.



4) Swapping of two numbers without using third variable approach.

- 5
 - 1) Start program
 - 2) Read two number A & B
 - 3) $A = A + B$
 $B = A - B$
 $A = A - B$
 - 4) Print A & B
 - 5) End program

5) Positive and Negative Number

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 - 1) Start program
 - 2) Enter number (n)
 - 3) $(n >= 0)$? "Positive": "Negative";
 - 4) Number is $= -$
 - 5) End program

6) Program to find leap

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 - 1) Start program
 - 2) Enter Year you want to check
 - 3) if ($Year \% 4 == 0 \&\& year \% 100 != 0$)
 Year is leap year
 - 4) else year is non leap year
 - 5) End program

7) Algorithm to print 1 to 10 without loop

- 1) Start program
- 2) int if $n=1$; if ($n \leq 10$)
print(n); $n++$;
- 3) End program

8) Program to write digits of given number

- 1) Start program
- 2) Read number A from user
- 3) $A \% 10 = \text{String } b$
- 4) Divide A / 10
- 5) Repeat step 2 until $A = 0$
- 6) print String b.
- 7) End program

9) Program to write all the factors of integer

- 1) Start program
- 2) Read integer n from user
- 3) for ($i=1$, $i \leq n/2$, $i++$)
if ($n \% i == 0$)
Print i
- 4) End program

10)

Program to find sum of digits of number

- i) start program
- ii) Read number A from user
- iii) Declare sum = 0
- iv) ($A \% 10 \rightarrow$) Add this digit to sum
- v) ($A / 10 \rightarrow$)
- vi) Repeat $A \% 10 & A / 10$ till $A = 0$
- vii) print sum
- viii) End program

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11) Program to find smallest of 3 numbers

- i) Start program
- ii) Enter 3 numbers a,b,c from user
- iii) if ($a > b \& a > c$)
 - print a is
- iii) if ($c < b \& a < c$)
 - print a is smallest number
- else if ($b < a \& b < c$)
 - print b is smallest number
- else
 - print c is smallest number
- 4) End program

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1) How to add two numbers without using arithmetic operators

→ 1) Start program

5) 2) Enter two numbers from user i.e. A & B
3) While ($B \neq 0$) {

~~int~~ carry = (A & B);

A = A ^ B ; // XOR to perform addition

B = carry << 1;

4)

Return A

- 4) Print variable A to get addition.
5) End program.

15) Program to reverse a number

→ 1) Start program

2) Enter number from User. 'n'

20) 3) Declare & initialize variable V = 0

4) $n \% 10 = a$

5) $a \times 10 = a + 10 + \cancel{\text{last}} a$

6) $n / 10 ; \cancel{n = 0} ; n \neq 0 ; n \neq +$

7) repeat 3,4,5

25) 8) Print variable V

9) End program

14) Algorithm to find GCD of 2 numbers

- 1) Start program
- 2) Declare $n_1, n_2, gcd = 1$;
- 3) Read n_1, n_2 from user.
- 4) Repeat until $i \leq n_1 \& i \leq n_2$
 If $n_1 \% i == 0 \& n_2 \% i == 0$,
 $gcd = i$
- 5) Print gcd
- 6) Stop program

15) Algorithm to find LCM of 2 numbers

- 1) Start program
- 2) Initialize A & B Variables
- 3) Common multiple of A & B = X
- 4) If X is divisible by A & B
- 5) Print X is LCM of 2 numbers
- 6) else $X++$; go to step 4
- 7) Stop program

16) Algorithm to find LCM of two numbers using prime factors method

- 1) Start program
- 2) Find the several multiples of numbers input by users A & B
 i.e. if $A \% 2 == 0 \& A \% 3 == 0 \& A \% 4 == 0 \& A \% 5 == 0 \dots$
- 3) Look for multiples common to both lists
- 4) If found common multiples in the list

- 5) Write out additional multiples for each number
- 6) Find smallest number common in both the lists
- 7) This is LCM. Print LCM
- 8) End program.

17) Algorithm to find palindrome number in Java

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- 1) Start program
 - 2) Read input number from user: A
 - 3) temp = A ;
 - 4) Reverse number
while ($A > 0$) {
 $r = A \% 10$ || remainder:
 $num = (num * 10) + r$
 $A = A / 10;$
}
 - 5) if (temp == num)
" Given number is palindrome number"
else
" Given numbers is not a palindrome
numbers"
 - 6) End program.

18) Algorithm to print prime factors of given number

- - 1) Start program
 - 2) Read input number N from user.
 - 3) Check if the number N has 2 as prime factors.
 - 4) Check ($N/2$) till remainder = 0
 - 5) Check for odd prime factors of N
 Do this in loop dividing N from 3 to SquareRoot(N) and check remainder is 0.
 - 6) Check if the value of N is still greater than 2
 - 7) If N is greater than 2, then N is a prime number with a power of 1.

19) Algorithm to print Even number series.

2 4 6 8 10 12 14 16 ...

- - 1) Start Program
 - 2) $\text{for}(i=1; i < 17; i++)$
 - 25 $\text{if } (i \% 2 == 0)$
 Print i
 else
 Continue;
 Run in loop.
 - 3) End program

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 20) Algorithm to print ODD number series
 1 3 5 7 9 11 13 ...

- 1) Start program
 2) $\text{for}(i=0; i<15; i++)$
 {
 if ($i \% 2 \neq 0$)
 Print i
 else
 Continue
 Run in loop.
 3) End program.

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