(105)10

|  |  |  |
| --- | --- | --- |
| 2 | 105 |  |
| 2 | 52 | 1 |
| 2 | 26 | 0 |
| 2 | 13 | 0 |
| 2 | 6 | 1 |
| 2 | 3 | 0 |
| 2 | 1 | 1 |
|  | 0 | 1 |

0(sign bit)1101001

1’complement:10010110

2’s complement:10010111

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| -128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| -128 | 0 | 0 | 16 | 0 | 4 | 2 | 1 |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

10110110

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| -128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| -128 | 0 | 32 | 16 | 0 | 4 | 2 | 0 |
|  |  |  |  |  |  |  |  |

-128+32+16+4+2=-74

10110101

1001010

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| 0 | 64 | 0 | 0 | 8 | 0 | 2 | 0 |
|  |  |  |  |  |  |  |  |

64+8+2=74

HCF of two numbers:

STEP 1:Begin

STEP 2:Input n,m

STEP 3:Find the minimum of the two numbers and store it in a variable a

STEP 4:i=1

STEP 5:Compute n%i & m%i

STEP 6:If both the values are 0, I is common factor of n amd m;h=i

STEP 7:i=i+1

STEP 8:repeat steps 5-7 till i=a

STEP 9:h is hcf of n and m

STEP 10:print h

STEP 11:end

LCM

STEP 1:begin

STEP 2:input n,m

STEP 3:x=n

STEP 4:compute x%m

STEP 5:if 0 then lcm=x otherwise x=x+n

STEP 6:repeat step 4 and 5 till x%m not equal to 0

STEP 7:print x as lcm

STEP 8: end

|  |  |  |
| --- | --- | --- |
| n | m | x |
| 20 | 36 | 20 |
| 20 | 36 | 40 |
| 20 | 36 | 60 |
| 20 | 36 | 80 |
| 20 | 36 | 100 |
| 20 | 36 | 120 |
| 20 | 36 | 140 |
| 20 | 36 | 160 |
| 20 | 36 | 180 |
|  |  |  |
|  |  |  |

S=1+2+5+12+29+70……n terms

ALGORITHM:

STEP 1:begin

STEP 2:accept n

STEP 3:s=0;i=1;a=0;b=1;c=0;

STEP 4:s=s+b

STEP 5:c=b\*2+a

STEP 6:a=b,b=c

STEP 7:i=i+1

STEP 8:repeat steps 4-7 till i=n

STEP 9:print s

STEP 10:end

STEP 1:begin

STEP 2:accept a word and store in a;w=””

STEP 3:convert a in uppercase using built in func

STEP 4:find length of a using built in func and store in l

STEP 5:run a loop and extract the letters and store it in a variable ch

STEP 6:ch=ch+l

STEP 6.1:if ch>90 ch=ch-26

STEP 7:w=w+ch

STEP 8:repeat steps 5-7 till value of variable =l-1

STEP 9:display w

STEP 10: end

Homework

*1.Accept a number.Find the number of digits.Run a loop to extract the digits and raise each digit to the power of number of digits & keep on adding these values in a variable.Finally if the sum=original number NARCISSISTIC NUMBER.*

*2.Accept a number* *and check whether it is a three digit number or not.If yes, then multiply the original number by 2 and 3.The other 2 nos. should be 3 digit number.Now if we consider the 3 numbers and observe that together that they contain the digit 1-9 then such numbers are called FASCINATING NUMBER.*

ANSWERS:

Answer 1:

STEP 1: Begin

STEP 2: Accept a number and store it in ‘n’

STEP 3: Find number of digits using in-built function and store it in ‘count’

STEP 4: sum=0, digit=0, copy=n, p=0

STEP 5: digit=n%10

STEP 6: find the value of digit raised to power of count using in-built function and store it in ‘p’

STEP 7: sum=sum + p

STEP 8: n=n/10

STEP 9: repeat steps 5 to 8 if n > 0

STEP 10: if sum is equal to copy then print “NARCISSISTIC NUMBER” else print “NOT A NARCISSISTIC NUMBER”

STEP 11: End

Answer 2:

1. Begin
2. Accept a number and store it in’n’
3. If n is a three digit number goto step 4 else display “not a 3 digit number” and goto step 18
4. t=2\*n and u=3\*n
5. if t and u are three digit numbers then goto step 6 else goto step 18
6. num=n\*(10^6) +t\*(10^3) +u
7. flag = true
8. digit=num%10
9. if digit=0 then flag is false and goto step18
10. copy=num,ct=0
11. if ct>1 then flag=false and goto step 18
12. d=copy%10
13. if digit = d , ct=ct+1
14. copy=copy/10
15. repeat steps 10 to 13 till copy>0
16. num=num/10
17. repeat steps 8 to 15 till num>0
18. if flag is true print “FASCINATING NUMBER” else print “ NOT A FASCINATING NUMBER”
19. End

Accept a year from the user and check whether it is magic leap year or not.

1. Begin
2. Accept a year from the user in the variable y
3. If y %4 =0 then store it in a variable ly else goto step 15
4. If ly%100 not equal to 0 then goto step 6
5. If ly%400 =0 then goto step 6 else goto step 15
6. Print y is a leap year
7. S=0,copy=y
8. S=S+y%10
9. y=y/10

10.repeat steps 8 and 9 if y>0

11.if S>9 then y=s and s=0 else goto 13

12.repeat steps 8 to 11

13.if S=1 then print MAGIC LEAP YEAR and goto 16

14.Print Sorry!!You are leaping but nothing magical and goto 16

15.Print Even a frog can leap but you can’t!!

16.End

BINARY SUBTRACTION

125-115

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | 10 |  |
| 1 | 1 | 1 | 1 | 1-1=0 | 0 | 1 |
| 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| 0 | 0 | 0 | 1 | 0 | 1 | 0 |
|  |  |  | 8 | 4 | 2 | 1 |
|  |  |  | 8 | 0 | 2 | 0 |

1111101-1110011=1010=2+8=10