R/A/S/M/EXAM
2021

130016

PRACTICAL PROGRAMMING

&

WEB DESIGN

Time : 2 hours]

[Full Marks : 100

Practical Programming

1. Choose *any* **one** of the following :   50×1=50

(a) Assume a financial organization that lends money on interest. The interest rate is x% per month on the principal amount. After every year, the due amount becomes the principal amount. Your program needs to calculate the amount to be paid after m months. It takes as input the loan amount, the values of x and m and prints a table showing the due amount up to the mth month.

Example :

Input :

Loan amount : 1000

Interest rate : 10

Number of months of loan : 14

Output :

Month	Principal	Due Amount
1	1000	1100
2	1000	1200
....	....	....
....	....	....
....	....	....
12	1000	2200
13	2200	2420
14	2200	2640

(b) A word that reads the same backward as forward is called a palindrome. E. g., MADAM and MALAYALAM are palindromes. Use the data structures, *Queue* and *Stack* to check whether a word is a palindrome or not. You need to create the corresponding functions (*Add* and *Delete* for Queue ; *Push* and *Pop* for Stack) and use them. You can read in the characters of the word one after another or as one single string. Print appropriate messages.

Example 1 :

Input :

Enter word : MADAM

Output :

The word MADAM is a palindrome.

Example 2 :

Input :

Enter word : TEACHER

Output :

The word TEACHER is not a palindrome.

(c) Euler's totient function, $\varnothing(n)$ is the number of positive integers less than n and relatively prime to n. Two numbers are relatively prime if their only common divisor is 1. Take a positive integer as input and print the positive integers less than n and relatively prime to n. Additionally, print the value of the totient function of that integer.

Example 1 :

Input :

Positive integer : 10

Output :

The positive integers which are less than 10 and relatively prime to 10 are :

    1   3   7   9

The totient function value of 10 is 4

Example 2 :

Input :

Positive integer : 7

Output :

The positive integers which are less than 7 and relatively prime to 7 are :

    1   2   3   4   5   6

The totient function value of 7 is 6

Web Design

2. Choose *any* **one** of the following : 50×1=50

(a) Suppose you are a tour operator with a company, **"Explore the Unexplored"**, which conducts tours for tourists visiting your home state (or any state). Create a webpage for your company using HTML, CSS and JavaScript. Your page must give some information (at least a paragraph) about the state which will be of interest to tourists. The page must also contain a list of at least 3 districts' names, which are covered by your company. Each list item is also a hyperlink, which on clicking takes you to another section in the page which describes about the district.

Most tourists from overseas are unfamiliar with the temperature measurement unit, Celsius, which you may have mentioned in your webpage (e. g., the minimum temperature could go below 1 degree Celsius in this hill station). So, your page also must provide a section to convert Celsius (C) to Fahrenheit (F) [the formula is $F=(C\times9/5)+32$] as follows :

Convert Celsius to Fahrenheit

Enter temperature in Celsius : [   ]   [Convert]

Temperature in Fahrenheit : [   ]

(b) Assume that you are interested in creating a webpage that contains your resume (bio-data) so as to attract potential employers from across the globe. Create such a webpage using HTML, CSS and JavaScript. Apart from other information, it must contain a table of your educational qualifications (school/college, start year, end year, CGPA/percentage) from high school onwards. The entry of school/college in the table must also be a hyperlink, which on clicking takes you to another section in the page which describes about the school/college.

Some employers may not be familiar with the CGPA system of grading. So, you need to provide a section in your webpage which converts CGPA to percentage (P) of marks [the formula is $P=CGPA\times9.5$] which is as follows :

Convert CGPA to Percentage of Marks

Enter CGPA (out of 10) : [   ]   [Convert]

Percentage of Marks : [   ]

(c) Imagine that you are the owner of an HR consultancy company, '**Land Your Dream Job**', which introduces job aspirants to potential employers based on their resume. A web portal to which aspirants can submit their resume would make your life easier. However, a person must register first to do so. Create the home webpage of your company with the help of HTML, CSS and JavaScript. The page must contain the following :

(i) Information about your company, such as what does it do, how many have received employement through your company over the past years etc.

(ii) A list consisting of the following two items (the underlined are hyperlinks) :

For government job vacancies in India, visit www.indgovtjobs.in

If you are an IAS aspirant, visit www.upsc.gov.in

(iii) A registration form asks for the username and password. On clicking the 'Register' button, it must be validated that the password is at least 8 characters long. E. g., in case a user enters a password of length 6 characters, a message box must come up which says, "*You must enter a password of at least 8 characters. Your password is of 6 characters!!!.*" Only on confirming by clicking the 'OK' button, the user must be allowed to enter a password again.

Registration

Enter username : ▭

Enter password : ▭

[Register]

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