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I explored different data science roles, their responsibilities, and the required skills.

Assignment 02

Variables

1. Write a program that swaps the values of two variables.

Ans: The simplest way to swap the values of two variables is using a temp variable. The temp variable is used to store the value of the first variable ($\text{temp} = a$). This allows you to swap the value of the two variables ($a = b$) and then assign the value of temp to the second variable.

2. Write a program that calculates the area of a rectangle given its length and width.

Ans: The formula for the area, 'A' of a rectangle whose length and width are 'l' and 'w' respectively is the product of length and width, that is, " $A = l \times w$ ". The formula for the perimeter, 'P' of a rectangle whose length and width are 'l' and 'w' respectively is $P = 2(l + w)$.

3. Write a program that converts temperature from Fahrenheit to Celsius.

Ans:

c

1. `#include<stdio.h>`
2. `int main()`
3. `{ float Fahrenheit, Celsius;`
4. `Fahrenheit = 64;`
5. `Celsius = ((Fahrenheit-32)*5)/9;`

6. `printf("\n\n Temperature in Celsius is : %f",Celsius);`
7. `return (0);`
8. `}`

4. Write a program that calculates the volume of a sphere given its radius.

Ans: C Program

- `#include <stdio.h>`
- `int main()`
- `{`
- `int radius=48;`
- `float pie=3.14285714286;`
- `double volume=(4.0/3.0)*pie*(radius*radius*radius);`
- `printf("Volume of the sphere=%f",volume);`
- `}`

5. Write a program that finds the average of three numbers.

Ans: Average This is the arithmetic mean, and is calculated by adding a group of numbers and then dividing by the count of those numbers. For example, the average of 2, 3, 3, 5, 7, and 10 is 30 divided by 6, which is 5.

Assignment 02

If-elif-else

6. Write a program that determines if a number is even or odd.

Ans: ven odd programs in C

1. `#include <stdio.h>`
2. `int main() {`
3. `int number;`
4. `printf("Enter a number: ");`
5. `scanf("%d", &number);`
6. `if (number % 2 == 0) {`
7. `printf("%d is an even number.\n", number);`

8. } else {

7. Write a program that finds the maximum of three numbers.

Ans:

1. Take the three numbers and store it in the variables num1, num2 and num3 respectively.
2. Firstly check if the num1 is greater than num2.
3. If it is, then check if it is greater than num3.
4. If it is, then print the output as “num1 value is the largest number. ...
5. Otherwise print the output as “num3 value is the largest number.

8. Write a program that determines if a year is a leap year or not.

Ans: `printf("Input a year :"); // Prompt the user to input a year.
scanf("%d", &chk_year); // Read and store the user's input in
'chk_year'. if ((chk_year % 400) == 0) // Check if 'chk_year' is divisible
by 400 with no remainder. printf("%d is a leap year.`

9. Write a program that determines if a number is positive, negative, or zero.

Ans:

Python Code:

```
if n == 0: print("It is Zero! ") # If the number is greater than zero, print that it is  
a positive number. else: print("Number is Positive number. ") # If the number is  
less than zero, print that it is a negative number.
```

10. Write a program that calculates the grade based on a given percentage.

Ans: For percentages, divide the sum by the number of entries. For example, if you have percentage grades for 30 tasks, divide the sum by 30. The quotient represents your final percentage grade.

Assignment 02

For Loop

11. Write a program that prints the first `n` natural numbers.

Ans:

```
h> void main() { int i; //Variable definition printf("The first 10 natural numbers are:\n "); for (i = 1; i <= 10; i++) //Iteration 10 times { printf("%d \t", i); //Print the number. } }
```

12. Write a program that calculates the factorial of a number.

Ans: Let's see the factorial Program using loop.

1. `#include<stdio.h>`
2. `int main()`
3. `{`
4. `int i,fact=1,number;`
5. `printf("Enter a number: ");`
6. `scanf("%d",&number);`
7. `for(i=1;i<=number;i++){`
8. `fact=fact*i;`

13. Write a program that generates a Fibonacci sequence of length `n`.

Ans:

What is Fibonacci Sequence? Here, we can observe that $F_n = F_{n-1} + F_{n-2}$ for every $n > 1$. For example: $F_2 = F_1 + F_0$.

14. Write a program that checks if a given number is prime or not.

Ans:

STEP 1: Take num as input. STEP 2: Initialize a variable temp to 0. STEP 3: Iterate a “for” loop from 2 to num/2. STEP 4: If num is divisible by loop iterator, then increment temp.

15. Write a program that prints the multiplication table of a given number.

Ans: C Program to Print Multiplication Table

1. Take the number as input.
2. Store the number in a variable.
3. Using loops print the number and its product with numbers 1-10 as output.
4. Print the result.

Assignment 02

While Loop

16. Write a program that finds the sum of all even numbers between 1 and `n`.

Ans: The sum of even numbers formula gives the sum total of all the even numbers. The formula to find the sum of even numbers is $n(n+1)$, where n is the natural number.

17. Write a program that reverses a given number.

Ans: Reverse a Number in C using For Loop

1. `#include <stdio.h> ...`
2. `int num, reversedNumber = 0, remainder, temp; ...`
3. `scanf("%d", &num); ...`
4. `temp = num; ...`
5. `// The difference here is that we'll use a for loop, which will run as long as the temporary variable is not zero. ...`
6. `remainder = temp % 10; ...`
7. `} ...`
8. `printf("Reversed Number = %d", reversedNumber);`

18. Write a program that checks if a given string is a palindrome.

Ans: Method 5 – Using an iterative loop

1. #Define a function.
2. def isPalindrome(string):
3. for i in range(int(len(string)/2)):
4. if string[i] != string[len(string)-i-1]:
5. return "The string is not a palindrome."
6. return "The string is a palindrome."
7. #Enter input string.
8. string = input ("Enter string: ")

19. Write a program that generates a random number and allows the user to guess it.

Ans: import random
n = random.randrange(1,10)
guess = int(input("Enter any number: "))
while n!= guess:
if guess < n:
print("Too low")
guess = int(input("Enter number again: "))
elif guess > n:
print("Too high! ")
guess = int(input("Enter number again: "))
else:
break
print("you guessed it right!!")

20. Write a program that finds the greatest common divisor (GCD) of two numbers.

Ans: The greatest common divisor (GCD) of two or more numbers is the greatest common factor number that divides them, exactly. It is also called the highest common factor (HCF). For example, the greatest common factor of 15 and 10 is 5, since both the numbers can be divided by 5.