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REVISION QUESTION 2

15. Identify errors in the below program and correct errors identified // program to find prime factor of a number #include (stdio.h> int main() { int counter, N; i, isPrime; printf(‘Enter a Number "); scanf("%d", &N); Printf("List of Prime Factors of %d ", N); /*Check for every number between 1 to N, whether it divides N */ for(counter = 2; conter <= N; counter++); { /* If counter completely divides N, * then it is a factor of N if(N%counter=0) { /* Check if counter is also a prime number */ isPrime == 1; for(i = 2; i <=(counter/2); i++) { if(counter%i==0) { isPrime=0; break } } if(isPrime==1) printf("%d ", counter); } } return 0; } // program to find prime factor of a number 16. What are operators? Discuss types of operator 17. N100,000 was deposited into a bank account and the annual interest rate is 5%. Write a C program to calculate the interest after 4 years. 18. Using Nested...Else...If Statements, write a program that decides the eligible voters. (Hint: an eligible voter should be >= 18yrs, has voter’s card, accredited and a Nigerian). 19. Write a C program to find if a patient is sick or not (if the temperature exceeds certain degree) using (i) if and (ii) if…else statements. 20. Write a C program using NESTED…IF Statements to choose between games based on the color. The ball for each game is specified as follows: Football – Red, Volleyball – White, Rugby – Pink, and Basketball – Yellow, Baseball – Green, Hockey - Magenta and Badminton – Blue. 21. Delvin Group of Company invests N1, 000, 530.00 in a savings account yielding 3 percent interest. Assuming that all interest is left on deposit in the account, using #define write a C program to calculate and print the amount of money in the account at the end of each year for 5years. Use the following formula for determining these amounts: a = p (1+r)n where p is the original amount invested (i.e. the principal) r is the annual interest rate n is the number of years and, a is the amount on

deposit at the end of nth year. Note: power in C is represented using pow(x, y), where the value to be calculated is x and raised to the yth power. 22. If A = 30 and B = 10. Using conditional statements, what is: 1. A < B ? 1 : 2 2. A==B? True : False 3. B < A ? 5 : 1 4. A>=B ? 0 : 1 23. Write a C program that computes the real roots of an equation. Ax2 + Bx + C=0. 24. Write a program that declares two integers, assigns to them the values 80 and 50, and displays their sum, difference, product, the precise result of their division (i.e., 1.6), and the remainder (i.e., 30). To find the remainder use the % operator. 25. Write a program that uses one printf() to display the following pattern ******* *** *** ******* 26. Use different printf() to make the following pattern ********** *** *** ** *** ** * ********** 27. Using scanf(), write a program that reads an integer, a float and a double number and then displays them.

SOLUTION

15. #include (stdio.h> - #include <stdio.h>

```
 int main() {
int counter, N; i, isPrime; -  int counter,N,I,isPrime;
 printf(‘Enter a Number "); - printf(“Enter  a number”):
scanf("%d", &N);
Printf("List of Prime Factors of %d ", N);
/*Check for every number between 1 to N, whether it divides N */
for(counter = 2; conter <= N; counter++); {
        /* If counter completely divides N, * then it is a factor of N
if(N%counter=0) {
         /* Check if counter is also a prime number */
         isPrime == 1;
        for(i = 2; i <=(counter/2); i++) {
            if(counter%i==0) {
    isPrime=0;
break }
}
if(isPrime==1)
```

```
    printf("%d ", counter); }
 return 0;
}
```

16.  Operators are the symbols which are used to perform logical and mathematical operations in a C program.
Types of operators
Arithmetic operators: These are used to perform mathematical calculations like addition, subtraction, multiplication, division and modulus
Assignment operators: These are used to assign the values for the variables in C programs
Relational operators: These operators are used to compare the value of two variables.
Logical operators: These operators are used to perform logical operations on the given two variables.
Bit wise operators: These operators are used to perform bit operations on given two variables.
Conditional operators (ternary operators): Conditional operators return one value if condition is true and returns another value is condition is false.
Increment/decrement operators: These operators are used to either increase or decrease the value of the variable by one.
Special operators: &, *, sizeof( ) operators

17.
```
#include <stdio.h>
#define P 100000
#define R 5
#define T 4
int main() {
 int I;
 I= (P*R*T)/100;
 printf("THE INTEREST AFTER 4YEARS is %d", I);
```

```
 return 0;
}
```

18.
```
#include<stdio.h>
int main()
{
        int age,card,accredited,nationality;
//input age
        printf("Enter your age: ");
        scanf("%d",&age);
        printf("1. YES\n");
   printf("2. NO\n");
        printf("Do you have voter's card ");
        scanf("%d", &card);
        printf("1. YES\n");
   printf("2. NO\n");
    printf("Are you accredited: ");
    scanf("%d", &accredited);
        printf("1. Nigerian\n");
   printf("2. Other\n");
        printf("what is your nationality: ");
        scanf("%d", &nationality);
//check voting eligibility
        if (age>=18 && card== 1 && accredited==1 && nationality==1)
        {
                printf("VOTING STATUS: ELIGIBLE\n\a");
        }
        else if (age<=18 && card==2 && accredited==2 && nationality==2 )
{

                printf("VOTING STATUS: NOT ELIGIBLE\n\a");
```

```
        }
        else if (age>=17 && card==1 && accredited==1 && nationality==1 )
{

                printf("VOTING STATUS: NOT ELIGIBLE\n\a");;

        }
        else if (age>=17 && card==2 && accredited==2 && nationality==2 )
{
          printf("VOTING STATUS: NOT ELIGIBLE\n\a");

        }
        else {

 printf("Check the conditions for voting\n\a ");
        }

        return 0;
}
```

```
19. #include<stdio.h>
int main(){
float n,temp=45.0;
printf("ENTER NUMBER OF N\n");
scanf("%f",&n);
  if(n > temp) {
    printf("The patient is sick\n ");
}
if (n<temp){
    printf("The patient is not sick\n ");
```

```
return 0;
}
}
```
20.

21.
```
#include<stdio.h>
#include<math.h>
#define P 1000530.00
#define R 0.03
int main(){
   double a,n;
   printf("(i) Enter the number of year = ");
   scanf("%lf",&n);

   a = P* pow((1+R),n);
   printf("The amount after the year is = %lf", a);

   printf("\n(ii) Enter the number of year = ");
   scanf("%lf",&n);

   a = P* pow((1+R),n);
   printf("The amount after the year is = %lf", a);
   printf("\n(iii) Enter the number of year = ");
   scanf("%lf",&n);
   a = P* pow((1+R),n);
   printf("The amount after the year is = %lf", a);
   printf("\n(iv) Enter the number of year = ");
   scanf("%lf",&n);
   a = P* pow((1+R),n);
   printf("The amount after the year is = %lf", a);
   printf("\n(v) Enter the number of year = ");
   scanf("%lf",&n);
```

```
   a = P* pow((1+R),n);
   printf("The amount after the year is = %lf", a);
return 0;
}
```

22.
```
#include<stdio.h>
#include<stdbool.h>
int main(){
   int A=30,B=10,C,D,E,F;
   bool True,False;
   C=(A < B ? 1 : 2 );
   D=(A==B? True : False);
   E=(B < A ? 5 : 1 );
   F=(A>=B ? 0 : 1 );

   printf("Value of A is %d\n",A);
    printf("Value of B is %d\n",B);
     printf("Value of C is %d\n",C);
      printf("Value of D is %d\n",D);
     printf("Value of E is %d\n",E);
     printf("Value of F is %d\n",F);

}
```

23.
```
#include <math.h>
#include <stdio.h>
int main() {
    double a, b, c, discriminant, root1, root2, realPart, imagPart;
    printf("Enter coefficients a, b and c: ");
```

```
    scanf("%lf %lf %lf", &a, &b, &c);

    discriminant = b * b - 4 * a * c;

    //  for real and different roots
    if (discriminant > 0) {
        root1 = (-b + sqrt(discriminant)) / (2 * a);
        root2 = (-b - sqrt(discriminant)) / (2 * a);
        printf("root1 = %.2lf and root2 = %.2lf", root1, root2);
    }

    // for real and equal roots
    else if (discriminant == 0) {
        root1 = root2 = -b / (2 * a);
        printf("root1 = root2 = %.2lf;", root1);
    }

    // if roots are not real
    else {
        realPart = -b / (2 * a);
        imagPart = sqrt(-discriminant) / (2 * a);
        printf("root1 = %.2lf+%.2lfi and root2 = %.2f-%.2fi", realPart, imagPart,
realPart, imagPart);
    }

    return 0;
}
```

```
24. #include <stdio.h>
 int main(){

 int A=80,B=50,sum,prod,difference, mod;
```

```
 double division;
 sum= A+B;
 prod= A*B;
 difference= A-B;
 division= (double) A /(double) B;
 mod=A%B;

 printf("THE SUM IS %d" ,sum);
 printf("\nTHE PRODUCT Is %d",prod);
  printf("\nTHE DIFFERENCE Is %d", difference);
  printf("\nTHE DIVISION IS %.1lf",division);
  printf("/nTHE REMAINDER IS %d",mod);

 }
```

25.
```
#include<stdio.h>
#include<conio.h>

int main() {

    printf("******* ***  *** *******");

    }
```

26.
```
#include<stdio.h>


int main() {

printf("***********  ");
```

```
printf(" *** ");
printf("*** ");
printf(" ** ");
printf(" *** ");
printf(" ** ");
printf(" * ");
printf("********** ");


}
```

27.
```
# include <stdio.h>

int main ()
{
	int A;
	float B;
	double C;

	//input
	printf("Input integer, float and values:\n ");
	scanf ("%d%f%lf", &A, &B, &C);

	//print
	printf ("Integer value: %d\n", A) ;
	printf ("Float value: %f\n", B) ;
	printf ("Double value: %lf\n", C) ;

	return 0;
}
```