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Assignment No 6

Pointer

Q1) Do all type 3 (with parameter, w/o return type) function programs using pointer.

```
#include <stdio.h>
#include <math.h>
void ffromc(int*);
void aeraandparameter(int *, int *, float *);
void reverse(int *);
void evenodd(int* );
void calculatebasic(int*);
void eligible(int* , char* );
void discount(float*);
void greater(int*, int*, int*);
void choicceopp(int *, int*, char *);
void studentornot(char* , int *);
void printtable(int *);
void calculatesumofnumber(int* , int *);
void checkprimeornot(int* );
void checkarmstrong(int* );
void checkperfect(int* );
void factorial(int *);
void checkpalindrome(int * );
void firstdigit(int* );
void rangepoerfect(int *,int *);

int main() {
    int f = 12;
```

```
ffromc(&f);


int length, width;
float radius;
printf("Enter length: ");
scanf("%d", &length);
printf("Enter width: ");
scanf("%d", &width);
printf("Enter value of radius: ");
scanf("%f", &radius);
aeraandparameter(&length, &width, &radius);

int number;
printf("Enter three-digit number: ");
scanf("%d", &number);
reverse(&number);

 int numberr;
printf("Enter number: ");
scanf("%d", &numberr);
evenodd(&numberr);


int basic;
printf("Enter basic salary: ");
```

```
scanf("%d", &basic);
calculatebasic(&basic);

int age;
char gender;
printf("Enter age: ");
scanf("%d", &age);
printf("Enter gender (M/F): ");
scanf(" %c", &gender);
eligible(&age, &gender);

float price;
printf("Enter item price: ");
scanf("%f", &price);
discount(&price);

int a, b, c;
printf("Enter three numbers: ");
scanf("%d %d %d", &a, &b, &c);
greater(&a, &b, &c);

int aa, bb;
char op;
printf("Enter two numbers: ");
scanf("%d %d", &aa, &bb);
printf("Choose operator (+, -, *, /): ");
```

```
scanf(" %c", &op);
choicceopp(&aa, &bb, &op);

char ch;
int pricee;
printf("Are you a student? (y/n): ");
scanf(" %c", &ch);
printf("Enter price of item: ");
scanf("%d", &pricee);
studentornot(&ch, &pricee);

 int num;
printf("Enter number: ");
scanf("%d", &num);
printtable(&num);

 int start, end;
printf("Enter start number: ");
scanf("%d", &start);
printf("Enter end number: ");
scanf("%d", &end);
calculatesumofnumber(&start, &end);

 int numm;
printf("Enter a number: ");
scanf("%d", &numm);
```

```
    checkprimeornot(&numm);

      int nummm;
    printf("Enter a number: ");
    scanf("%d", &nummm);
    checkarmstrong(&nummm);


    int nummmm;
    printf("Enter a number: ");
    scanf("%d", &nummmm);
checkperfect(&nummmm);


int nummmmm;
  printf("Enter a number: ");
    scanf("%d", &nummmmm);
     factorial(& nummmmm);

     int nummmmmm;
 printf("Enter a number: ");
    scanf("%d", &nummmmmm);
    checkpalindrome(&nummmmmm);

     int nummmmmmm;
    printf("Enter number: ");
```

```
    scanf("%d", &nummmmmmm);
    firstdigit( &nummmmmmm);

}

void ffromc(int *f) {
    int c = (*f - 32) * 5 / 9;
    printf("%d°F is %d°C\n", *f, c);
}
void aeraandparameter(int *length, int *width, float *radius) {
    double area, perimeter, circle_area, circle_perimeter;
    const double PI = 3.1416;

    area = (*length) * (*width);
    perimeter = 2 * (*length + (*width));
    circle_area = PI * (*radius) * (*radius);
    circle_perimeter = 2 * PI * (*radius);

    printf("Area of rectangle = %.2f\n", area);
    printf("Perimeter of rectangle = %.2f\n", perimeter);
    printf("Area of circle = %.2f\n", circle_area);
    printf("Perimeter of circle = %.2f\n", circle_perimeter);
}

void reverse(int *num) {
    int number=(*num);
```

```
    int rem1 = number % 10;
    number = number / 10;
    int rem2 = number % 10;
    number = number / 10;
    int rem3 = number % 10;

    int sum = rem1 + rem2 + rem3;
    printf("Sum of digits: %d\n", sum);
    printf("Reversed number: %d%d%d\n", rem1, rem2, rem3);
}

void evenodd(int* numb) {
    int number=(*numb);
    if (number % 2 == 0) {
        printf("%d is even\n", number);
    } else {
        printf("%d is odd\n", number);
    }
}

void calculatebasic(int* ba) {
    int basic=(*ba);
    double da, ta, hra, totalsalary;

    if (basic <= 5000) {
        da = 0.10 * basic;
```

```
        ta = 0.15 * basic;
        hra = 0.25 * basic;
    } else {
        da = 0.15 * basic;
        ta = 0.25 * basic;
        hra = 0.30 * basic;
    }
    totalsalary = basic + ta + da + hra;
    printf("Total salary is = %.2lf\n", totalsalary);
}

void eligible(int* agee, char* genderr) {
    int age=(*agee); int gender=(*genderr);
    if ((gender == 'M' && age >= 21) || (gender == 'F' && age >= 18)) {
        printf("Eligible for marriage\n");
    } else {
        printf("Not eligible for marriage\n");
    }
}

void discount(float* pricee) {
    int price=(*pricee);
    double discount = 0;
    if (price < 1000) {
        discount = 0.10;
    } else if (price >= 1000 && price <= 5000) {
```

```
        discount = 0.20;
    } else {
        discount = 0.30;
    }
    double final = price - (price * discount);
    printf("Final price after discount: %.2f\n", final);
}
void greater(int* aa, int* bb, int* cc) {
    int a=(*aa); int b=(*bb); int c=(*cc);
    if (a >= b && a >= c) {
        printf("%d is the greatest\n", a);
    } else if (b >= c) {
        printf("%d is the greatest\n", b);
    } else {
        printf("%d is the greatest\n", c);
    }
}

void choicceopp(int *aa, int*bb, char *oop) {
    int a=(*aa); int b=(*bb); char op=(*oop);
    if (op == '+') {
        printf("Result: %d\n", a + b);
    } else if (op == '-') {
        printf("Result: %d\n", a - b);
    } else if (op == '*') {
        printf("Result: %d\n", a * b);
```

```
    } else if (op == '/') {
        if (b != 0) {
            printf("Result: %d\n", a / b);
        } else {
            printf("Error: Division by zero.\n");
        }
    } else {
        printf("Invalid operator.\n");
    }
}

void studentornot(char* chh, int *pricee) {
    char ch=(*chh); int price=(*pricee);
    double discount = (ch == 'y' || ch == 'Y') ? (price > 500 ? 0.20 : 0.10) : (price
> 600 ? 0.15 : 0.00);
    double final = price - (price * discount);
    printf("Final price after discount: %.2f\n", final);
}

void printtable(int *numm) {
    int num=(*numm);
    for (int i = 1; i <= 10; i++) {
        printf("%d x %d = %d\n", num, i, num * i);
    }
}
```

```
void calculatesumofnumber(int* startt, int *ennd) {
    int sum = 0;  int start=(*startt); int end=(*ennd);
    for (int i = start; i <= end; i++) {
        sum += i;
    }
    printf("Sum = %d\n", sum);
}

void checkprimeornot(int* numm){
    int num=(*numm);
     int isPrime = 1;
     if (num <= 1) {
         isPrime = 0;
    } else {
        for (int i = 2; i <= num / 2; i++) {
            if (num % i == 0) {
                isPrime = 0;
                break;
            }
        }
    }
    printf("%d is %s prime number.\n", num, isPrime ? "a" : "not a");
}

void checkarmstrong(int* numm) {
    int num=(*numm);
```

```
    int temp, remainder, result = 0, n = 0;
    temp = num;
    while (temp != 0) {
        temp /= 10;
        ++n;
    }
    temp = num;
    while (temp != 0) {
        remainder = temp % 10;
        result += pow(remainder, n);
        temp /= 10;
    }
    if (result == num) {
        printf("%d is an Armstrong number.\n", num);
    } else {
        printf("%d is not an Armstrong number.\n", num);
    }
}

void checkperfect(int* numm) {
    int sum = 0; int num=(*numm);


    for (int i = 1; i < num; i++) {
        if (num % i == 0) {
            sum += i;
```

```
        }
    }
    if (sum == num) {
        printf("%d is a perfect number.\n", num);
    } else {
        printf("%d is not a perfect number.\n", num);
    }
}

void factorial(int *numm) {
    int num=(*numm);
    int  fact = 1;
    printf("Enter a number: ");
    scanf("%d", &num);

    for (int i = 1; i <= num; i++) {
        fact *= i;
    }
    printf("Factorial of %d is %d\n", num, fact);
}

void checkpalindrome(int * numm) {
    int num=(*numm);
    int original, reversed = 0, remainder;
    printf("Enter a number: ");
    scanf("%d", &num);
```

```
    original = num;
    while (num != 0) {
        remainder = num % 10;
        reversed = reversed * 10 + remainder;
        num /= 10;
    }

    if (original == reversed) {
        printf("%d is a palindrome.\n", original);
    } else {
        printf("%d is not a palindrome.\n", original);
    }
}

 void firstdigit(int* numm) {
    int num=(*numm);
    int first = num;
    while (first >= 10) {
        first /= 10;
    }
    int last = num % 10;
    printf("First digit: %d, Last digit: %d, Sum: %d\n", first, last, first + last);
}

void rangepoerfect(int *startt,int *ennd) {
```

```
    int start=(*startt); int end=(*ennd);


    for (int num = start; num <= end; num++) {
        int sum = 0;
        for (int i = 1; i < num; i++) {
            if (num % i == 0) {
                sum += i;
            }
        }
        if (sum == num) {
            printf("%d\n", num);
        }
    }
}
```