ATHERBAN DAS
22100BTCSICS11152

ASSIGNMENT II

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// Question 1. Write a program Print factorial of a number.
#include <stdio.h>
int main() {
    int n, i, f = 1;
    scanf("%d", &n);
    for(i = 1; i <= n; i++) f *= i;
    printf("%d", f);
    return 0;
}

// Question 2. Write a program Reverse a given number.
#include <stdio.h>
int main() {
    int n, r = 0;
    scanf("%d", &n);
    while(n) {
        r = r * 10 + n % 10;
        n /= 10;
    }
    printf("%d", r);
    return 0;
}

// Question 3. Write a Program Find the sum of digits of a number.
#include <stdio.h>
int main() {
    int n, s = 0;
    scanf("%d", &n);
    while(n) {
        s += n % 10;
        n /= 10;
    }
    printf("%d", s);
    return 0;
}

// Question 4. Write a program Print Fibonacci series up to N
terms.
#include <stdio.h>
int main() {
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    int n, a = 0, b = 1, c, i;
    scanf("%d", &n);
    for(i = 0; i < n; i++) {
        printf("%d ", a);
        c = a + b;
        a = b;
        b = c;
    }
    return 0;
}

// Question 5. Write a program Find GCD (HCF) of two numbers using
loop.
#include <stdio.h>
int main() {
    int a, b, i, g;
    scanf("%d %d", &a, &b);
    for(i = 1; i <= a && i <= b; i++) {
        if(a % i == 0 && b % i == 0) g = i;
    }
    printf("%d", g);
    return 0;
}

// Question 6. Write a Program Find LCM of two numbers using loop.
#include <stdio.h>
int main() {
    int a, b, m;
    scanf("%d %d", &a, &b);
    m = (a > b) ? a : b;
    while(1) {
        if(m % a == 0 && m % b == 0) {
            printf("%d", m);
            break;
        }
        m++;
    }
    return 0;
}

// Question 7. Display all Armstrong numbers between 1 and 1000.
#include <stdio.h>
int main() {
```

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    int n, x, d, s;
    for(n = 1; n <= 1000; n++) {
        x = n;
        s = 0;
        while(x) {
            d = x % 10;
            s += d * d * d;
            x /= 10;
        }
        if(s == n) printf("%d\n", n);
    }
    return 0;
}

// Question 8. Check if a number is an Armstrong number.
#include <stdio.h>
int main() {
    int n, x, d, s = 0;
    scanf("%d", &n);
    x = n;
    while(x) {
        d = x % 10;
        s += d * d * d;
        x /= 10;
    }
    if(s == n) printf("Yes");
    else printf("No");
    return 0;
}

// Question 9. Check if a number is a strong number.
#include <stdio.h>
int main() {
    int n, x, s = 0, i, f;
    scanf("%d", &n);
    x = n;
    while(x) {
        f = 1;
        for(i = 1; i <= x % 10; i++) f *= i;
        s += f;
        x /= 10;
    }
    if(s == n) printf("Yes");
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    else printf("No");
    return 0;
}
// Question 10. Print all strong numbers between 1 and 1000.
#include <stdio.h>
int main() {
    int n, x, s, i, f, d;
    for(n = 1; n <= 1000; n++) {
        x = n;
        s = 0;
        while(x) {
            f = 1;
            d = x % 10;
            for(i = 1; i <= d; i++) f *= i;
            s += f;
            x /= 10;
        }
        if(s == n) printf("%d\n", n);
    }
    return 0;
}

// Question 11. Write a Program to check is prime or not.
#include <stdio.h>
int main() {
    int n, i, f = 1;
    scanf("%d", &n);
    if(n < 2) f = 0;
    for(i = 2; i * i <= n; i++) {
        if(n % i == 0) f = 0;
    }
    if(f) printf("Yes");
    else printf("No");
    return 0;
}

// Question 12. Write a program to Print series of Prime no.
#include <stdio.h>
int main() {
    int n, i, j, f;
    scanf("%d", &n);
    for(i = 2; i <= n; i++) {
        f = 1;
```

```
        for(j = 2; j * j <= i; j++) {
            if(i % j == 0) f = 0;
        }
        if(f) printf("%d ", i);
    }
    return 0;
}

// Question 13. Write a program to check a no is palindrome or
not.
#include <stdio.h>
int main() {
    int n, r = 0, x;
    scanf("%d", &n);
    x = n;
    while(x) {
        r = r * 10 + x % 10;
        x /= 10;
    }
    if(n == r) printf("Yes");
    else printf("No");
    return 0;
}

// Question 14. Write a Program to Convert the Binary to Decimal.
#include <stdio.h>
int main() {
    int b, d = 0, p = 1;
    scanf("%d", &b);
    while(b) {
        d += (b % 10) * p;
        p *= 2;
        b /= 10;
    }
    printf("%d", d);
    return 0;
}

// Question 15. Write a Program to convert a Decimal to Binary.
#include <stdio.h>
int main() {
    int n, b[32], i = 0;
    scanf("%d", &n);
```

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    while(n) {
        b[i++] = n % 2;
        n /= 2;
    }
    for(i = i - 1; i >= 0; i--) printf("%d", b[i]);
    return 0;
}

// Question 16. Write a Program Print a right-angled triangle of
numbers.
#include <stdio.h>
int main() {
    int n, i, j;
    scanf("%d", &n);
    for(i = 1; i <= n; i++) {
        for(j = 1; j <= i; j++) printf("%d ", j);
        printf("\n");
    }
    return 0;
}


// Question 17. Write a Program Print an inverted triangle of
stars.
#include <stdio.h>
int main() {
    int n, i, j;
    scanf("%d", &n);
    for(i = n; i >= 1; i--) {
        for(j = 1; j <= i; j++) printf("*");
        printf("\n");
    }
    return 0;
}

// Question 18. Write a Program Print a pyramid pattern of stars.
#include <stdio.h>
int main() {
    int n, i, j;
    scanf("%d", &n);
    for(i = 1; i <= n; i++) {
        for(j = 1; j <= n - i; j++) printf(" ");
        for(j = 1; j <= 2 * i - 1; j++) printf("*");
```

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        printf("\n");
    }
    return 0;
}

// Question 19. Write a Program Print a diamond pattern using
stars.
#include <stdio.h>
int main() {
    int n, i, j;
    scanf("%d", &n);
    for(i = 1; i <= n; i++) {
        for(j = 1; j <= n - i; j++) printf(" ");
        for(j = 1; j <= 2 * i - 1; j++) printf("*");
        printf("\n");
    }
    for(i = n - 1; i >= 1; i--) {
        for(j = 1; j <= n - i; j++) printf(" ");
        for(j = 1; j <= 2 * i - 1; j++) printf("*");
        printf("\n");
    }
    return 0;
}

// Question 20. Write a Program Print Floyd's triangle.
#include <stdio.h>
int main() {
    int n, i, j, k = 1;
    scanf("%d", &n);
    for(i = 1; i <= n; i++) {
        for(j = 1; j <= i; j++) printf("%d ", k++);
        printf("\n");
    }
    return 0;
}

// Question 21. Write a Program Print Pascal's triangle.
#include <stdio.h>
int main() {
    int n, i, j, c;
    scanf("%d", &n);
    for(i = 0; i < n; i++) {
        c = 1;
```

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        for(j = 1; j <= n - i; j++) printf(" ");
        for(j = 0; j <= i; j++) {
            printf("%d ", c);
            c = c * (i - j) / (j + 1);
        }
        printf("\n");
    }
    return 0;
}

// Question 22. Write a Program Print a square pattern of stars.
#include <stdio.h>
int main() {
    int n, i, j;
    scanf("%d", &n);
    for(i = 0; i < n; i++) {
        for(j = 0; j < n; j++) printf("*");
        printf("\n");
    }
    return 0;
}

// Question 23. Write a Program Print a hollow square of stars.
#include <stdio.h>
int main() {
    int n, i, j;
    scanf("%d", &n);
    for(i = 0; i < n; i++) {
        for(j = 0; j < n; j++) {
            if(i == 0 || i == n - 1 || j == 0 || j == n - 1)
printf("*");
            else printf(" ");
        }
        printf("\n");
    }
    return 0;
}

// Question 24. Print butterfly pattern.
#include <stdio.h>
int main() {
    int n, i, j;
    scanf("%d", &n);
```

```
    for(i = 1; i <= n; i++) {
        for(j = 1; j <= i; j++) printf("*");
        for(j = 1; j <= 2*(n - i); j++) printf(" ");
        for(j = 1; j <= i; j++) printf("*");
        printf("\n");
    }
    for(i = n; i >= 1; i--) {
        for(j = 1; j <= i; j++) printf("*");
        for(j = 1; j <= 2*(n - i); j++) printf(" ");
        for(j = 1; j <= i; j++) printf("*");
        printf("\n");
    }
    return 0;
}

// Question 25. Print hollow pyramid pattern.
#include <stdio.h>
int main() {
    int i, j, n;
    scanf("%d", &n);
    for(i = 1; i <= n; i++) {
        for(j = 1; j <= n - i; j++) printf(" ");
        for(j = 1; j <= 2*i - 1; j++) {
            if(j == 1 || j == 2*i - 1 || i == n) printf("*");
            else printf(" ");
        }
        printf("\n");
    }
    return 0;
}

// Question 26. Print concentric square number pattern.
#include <stdio.h>
int main() {
    int n, i, j, min;
    scanf("%d", &n);
    for(i = 0; i < 2*n - 1; i++) {
        for(j = 0; j < 2*n - 1; j++) {
            min = i < j ? i : j;
            min = min < 2*n - 1 - i ? min : 2*n - 1 - i - 1;
            min = min < 2*n - 1 - j ? min : 2*n - 1 - j - 1;
            printf("%d ", n - min);
        }
```

```
        printf("\n");
    }
    return 0;
}

// Question 27. Create a simple digital clock (HH:MM:SS) that runs
using loops for 10 seconds.
#include <stdio.h>
#include <unistd.h>
int main() {
    int h = 0, m = 0, s = 0, i;
    for(i = 0; i < 10; i++) {
        printf("%02d:%02d:%02d\n", h, m, s);
        s++;
        if(s == 60) { s = 0; m++; }
        if(m == 60) { m = 0; h++; }
        sleep(1);
    }
    return 0;
}

// Question 30. Print The Following Pattern
// 1
// 2 1
// 3 2 1
// 4 3 2 1
#include <stdio.h>
int main() {
    int i, j, n;
    scanf("%d", &n);
    for(i = 1; i <= n; i++) {
        for(j = i; j >= 1; j--) printf("%d ", j);
        printf("\n");
    }
    return 0;
}

// Question 31. Print The Following Pattern
// 5 4 3 2 1
// 4 3 2 1
// 3 2 1
// 2 1
// 1
```

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```c
#include <stdio.h>
int main() {
    int i, j;
    for(i = 5; i >= 1; i--) {
        for(j = i; j >= 1; j--) printf("%d ", j);
        printf("\n");
    }
    return 0;
}
```