ATHERBAN DAS
22100BTCSICS11152

ASSIGNMENT I

```c
// Question 1: Area of a Rectangle
#include <stdio.h>
int main() {
    int l, b;
    scanf("%d %d", &l, &b);
    printf("%d", l * b);
    return 0;
}

// Question 2: Perimeter of a Rectangle
#include <stdio.h>
int main() {
    int l, b;
    scanf("%d %d", &l, &b);
    printf("%d", 2 * (l + b));
    return 0;
}

// Question 3: Area of a Circle
#include <stdio.h>
int main() {
    float r;
    scanf("%f", &r);
    printf("%f", 3.14 * r * r);
    return 0;
}

// Question 4: Circumference of a Circle
#include <stdio.h>
int main() {
    float r;
    scanf("%f", &r);
    printf("%f", 2 * 3.14 * r);
    return 0;
}

// Question 5: Area of a Triangle
#include <stdio.h>
int main() {
    float b, h;
    scanf("%f%f", &b, &h);
```

```
    printf("%f", 0.5 * b * h);
    return 0;
}

// Question 6: Simple Interest
#include <stdio.h>
int main() {
    float p, r, t;
    scanf("%f%f%f", &p, &r, &t);
    printf("%f", (p * r * t) / 100);
    return 0;
}

// Question 7: Celsius to Fahrenheit
#include <stdio.h>
int main() {
    float c;
    scanf("%f", &c);
    printf("%f", (c * 9 / 5) + 32);
    return 0;
}

// Question 8: Fahrenheit to Celsius
#include <stdio.h>
int main() {
    float f;
    scanf("%f", &f);
    printf("%f", (f - 32) * 5 / 9);
    return 0;
}

// Question 9: Volume of a Cube
#include <stdio.h>
int main() {
    int a;
    scanf("%d", &a);
    printf("%d", a * a * a);
    return 0;
}

// Question 10: Volume of a Sphere
#include <stdio.h>
int main() {
```

```
    float r;
    scanf("%f", &r);
    printf("%f", (4.0 / 3) * 3.14 * r * r * r);
    return 0;
}

// Question 11: Average of Three Numbers
#include <stdio.h>
int main() {
    int x, y, z;
    scanf("%d %d%d", &x, &y, &z);
    printf("%f", (x + y + z) / 3.0);
    return 0;
}

// Question 12: Speed, Distance, Time
#include <stdio.h>
int main() {
    float s, d, t;
    scanf("%f%f", &d, &t);
    s = d / t;
    printf("%f", s);
    return 0;
}

// Question 13: Kinetic Energy
#include <stdio.h>
int main() {
    float m, v;
    scanf("%f%f", &m, &v);
    printf("%f", 0.5 * m * v * v);
    return 0;
}

// Question 14: Potential Energy
#include <stdio.h>
int main() {
    float m, g, h;
    scanf("%f%f%f", &m, &g, &h);
    printf("%f", m * g * h);
    return 0;
}
```

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// Question 15: Volume of Cylinder
#include <stdio.h>
int main() {
    float r, h;
    scanf("%f%f", &r, &h);
    printf("%f", 3.14 * r * r * h);
    return 0;
}

// Question 16: Total Surface Area of Cube
#include <stdio.h>
int main() {
    int a;
    scanf("%d", &a);
    printf("%d", 6 * a * a);
    return 0;
}

// Question 17: Area of Trapezoid
#include <stdio.h>
int main() {
    float a, b, h;
    scanf("%f%f%f", &a, &b, &h);
    printf("%f", 0.5 * (a + b) * h);
    return 0;
}

// Question 18: Pythagorean Theorem
#include <stdio.h>
#include <math.h>
int main() {
    float a, b;
    scanf("%f%f", &a, &b);
    printf("%f", sqrt(a * a + b * b));
    return 0;
}

// Question 19: Electrical Power
#include <stdio.h>
int main() {
    float v, i;
    scanf("%f%f", &v, &i);
    printf("%f", v * i);
```

```
    return 0;
}

// Question 20: Greatest of 3 Numbers without Conditionals
#include <stdio.h>
int main() {
    int a, b, c, max;
    scanf("%d %d%d", &a, &b, &c);
    max = a * ((a >= b) && (a >= c)) + b * ((b >= a) && (b >= c))
+ c * ((c >= a) && (c >= b));
    printf("%d", max);
    return 0;
}

// Question 21: Check if Two Integers are Equal
#include <stdio.h>
int main() {
    int a, b;
    scanf("%d %d", &a, &b);
    if(a == b)
        printf("Equal");
    else
        printf("Not Equal");
    return 0;
}

// Question 22: Admission Eligibility
#include <stdio.h>
int main() {
    int m, p, c;
    scanf("%d %d%d", &m, &p, &c);
    int total = m + p + c;
    if(m >= 60 && p >= 50 && c >= 40 && total >= 200)
        printf("Eligible");
    else
        printf("Not Eligible");
    return 0;
}

// Question 23: Electricity Bill
#include <stdio.h>
int main() {
    int u;
```

```
    float bill;
    scanf("%d", &u);
    if(u <= 50)
        bill = u * 0.50;
    else if(u <= 150)
        bill = 25 + (u - 50) * 0.75;
    else if(u <= 250)
        bill = 100 + (u - 150) * 1.20;
    else
        bill = 220 + (u - 250) * 1.50;
    bill += bill * 0.20;
    printf("%.2f", bill);
    return 0;
}

// Question 24: Check Triangle by Angles
#include <stdio.h>
int main() {
    int a, b, c;
    scanf("%d %d%d", &a, &b, &c);
    if(a + b + c == 180)
        printf("Valid");
    else
        printf("Invalid");
    return 0;
}

// Question 25: Days in Month
#include <stdio.h>
int main() {
    int m;
    scanf("%d", &m);
    if(m == 2)
        printf("28 or 29 days");
    else if(m == 4 || m == 6 || m == 9 || m == 11)
        printf("30 days");
    else if(m >= 1 && m <= 12)
        printf("31 days");
    else
        printf("Invalid");
    return 0;
}
```

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```c
// Question 26: Same as 25
#include <stdio.h>
int main() {
    int m;
    scanf("%d", &m);
    if(m == 2)
        printf("28 or 29 days");
    else if(m == 4 || m == 6 || m == 9 || m == 11)
        printf("30 days");
    else if(m >= 1 && m <= 12)
        printf("31 days");
    else
        printf("Invalid");
    return 0;
}

// Question 27: Positive or Negative
#include <stdio.h>
int main() {
    int n;
    scanf("%d", &n);
    if(n >= 0)
        printf("Positive");
    else
        printf("Negative");
    return 0;
}

// Question 28: Leap Year
#include <stdio.h>
int main() {
    int y;
    scanf("%d", &y);
    if((y % 4 == 0 && y % 100 != 0) || y % 400 == 0)
        printf("Leap Year");
    else
        printf("Not Leap Year");
    return 0;
}
```

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```c
// Question 29: Vote Eligibility
#include <stdio.h>
int main() {
    int age;
    scanf("%d", &age);
    if(age >= 18)
        printf("Eligible");
    else
        printf("Not Eligible");
    return 0;
}

// Question 30: Value of n based on m
#include <stdio.h>
int main() {
    int m;
    scanf("%d", &m);
    if(m > 0)
        printf("1");
    else if(m == 0)
        printf("0");
    else
        printf("-1");
    return 0;
}

// Question 31: Height Category
#include <stdio.h>
int main() {
    int h;
    scanf("%d", &h);
    if(h < 150)
        printf("Short");
    else if(h >= 150 && h <= 170)
        printf("Average");
    else
        printf("Tall");
    return 0;
}

// Question 32: Largest of Three
#include <stdio.h>
int main() {
```

```
    int a, b, c;
    scanf("%d %d%d", &a, &b, &c);
    if(a >= b && a >= c)
        printf("%d", a);
    else if(b >= a && b >= c)
        printf("%d", b);
    else
        printf("%d", c);
    return 0;
}

// Question 33: Quadrant Check
#include <stdio.h>
int main() {
    int x, y;
    scanf("%d %d", &x, &y);
    if(x > 0 && y > 0)
        printf("1st");
    else if(x < 0 && y > 0)
        printf("2nd");
    else if(x < 0 && y < 0)
        printf("3rd");
    else if(x > 0 && y < 0)
        printf("4th");
    else if(x == 0 && y == 0)
        printf("Origin");
    else if(x == 0)
        printf("Y axis");
    else
        printf("X axis");
    return 0;
}

// Question 34: Roots of Quadratic
#include <stdio.h>
#include <math.h>
int main() {
    float a, b, c, d, r1, r2;
    scanf("%f%f%f", &a, &b, &c);
    d = b * b - 4 * a * c;
    if(d > 0) {
        r1 = (-b + sqrt(d)) / (2 * a);
        r2 = (-b - sqrt(d)) / (2 * a);
```

```
        printf("%f %f", r1, r2);
    } else if(d == 0) {
        r1 = -b / (2 * a);
        printf("%f", r1);
    } else {
        printf("Imaginary");
    }
    return 0;
}

// Question 35: Simple Calculator
#include <stdio.h>
int main() {
    int a, b;
    char op;
    scanf("%d %c %d", &a, &op, &b);
    switch(op) {
        case '+': printf("%d", a + b); break;
        case '-': printf("%d", a - b); break;
        case '*': printf("%d", a * b); break;
        case '/': if(b != 0) printf("%d", a / b); else
printf("Err"); break;
        default: printf("Invalid");
    }
    return 0;
}

// Question 36: Basic ATM
#include <stdio.h>
int main() {
    float b = 1000, amt;
    char c;
    scanf(" %c", &c);
    if(c == 'D') {
        scanf("%f", &amt);
        b += amt;
    } else if(c == 'W') {
        scanf("%f", &amt);
        if(amt <= b)
            b -= amt;
        else
            printf("Insufficient balance\n");
    } else {
```

```
        printf("Invalid choice\n");
    }
    printf("Balance: %.2f", b);
    return 0;
}

// Question 37: Area Menu
#include <stdio.h>
int main() {
    int ch;
    float a, b;
    scanf("%d", &ch);
    switch(ch) {
        case 1: scanf("%f", &a); printf("%f", 3.14159 * a * a);
break;
        case 2: scanf("%f%f", &a, &b); printf("%f", a * b); break;
        case 3: return 0;
        default: printf("Wrong");
    }
    return 0;
}

// Question 38: Store Discount
#include <stdio.h>
int main() {
    float amt;
    char t;
    scanf("%f %c", &amt, &t);
    if(t == 'P') {
        if(amt >= 1000)
            amt *= 0.85;
        else
            amt *= 0.90;
    } else if(t == 'R') {
        if(amt >= 1000)
            amt *= 0.95;
    }
    printf("%.2f", amt);
    return 0;
}
```

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```c
// Question 39: Loan Eligibility
#include <stdio.h>
int main() {
    int inc, age;
    scanf("%d %d", &inc, &age);
    if(inc >= 25000 && age >= 21)
        printf("Eligible");
    else
        printf("Not Eligible");
    return 0;
}

// Question 40: Triangle Type
#include <stdio.h>
int main() {
    int a, b, c;
    scanf("%d %d%d", &a, &b, &c);
    if(a == b && b == c)
        printf("Equilateral");
    else if(a == b || b == c || a == c)
        printf("Isosceles");
    else
        printf("Scalene");
    return 0;
}
```