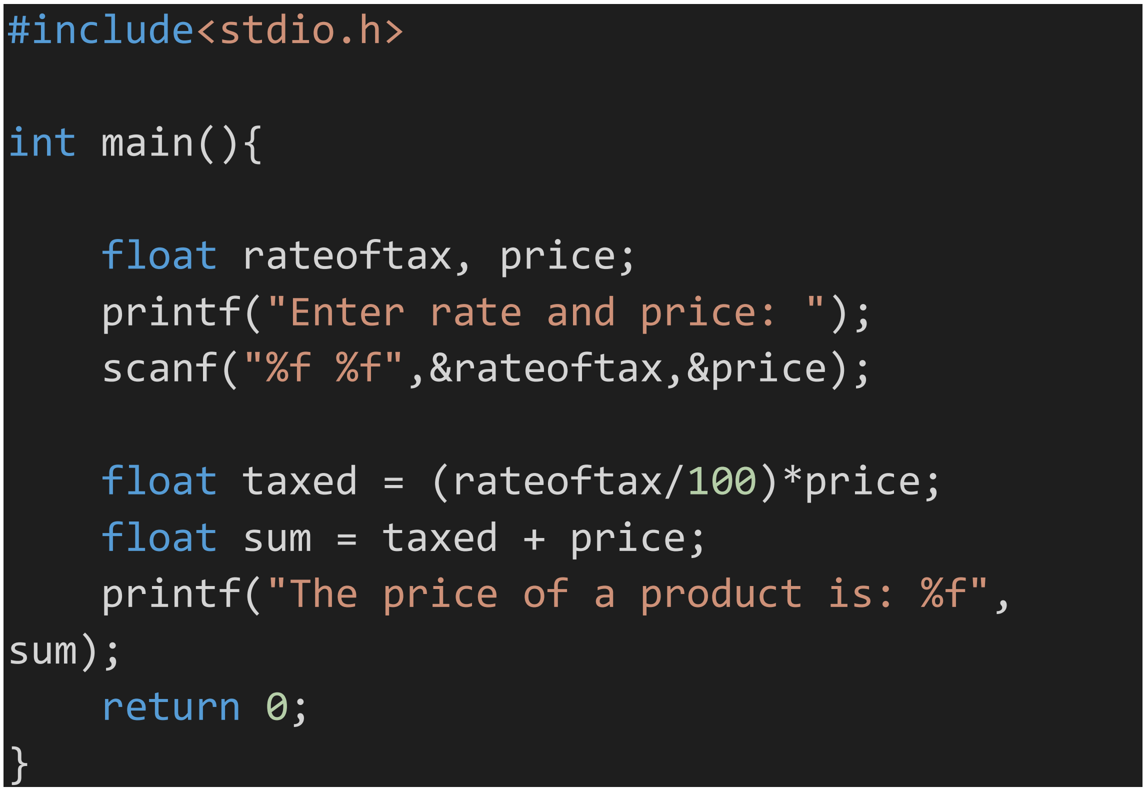
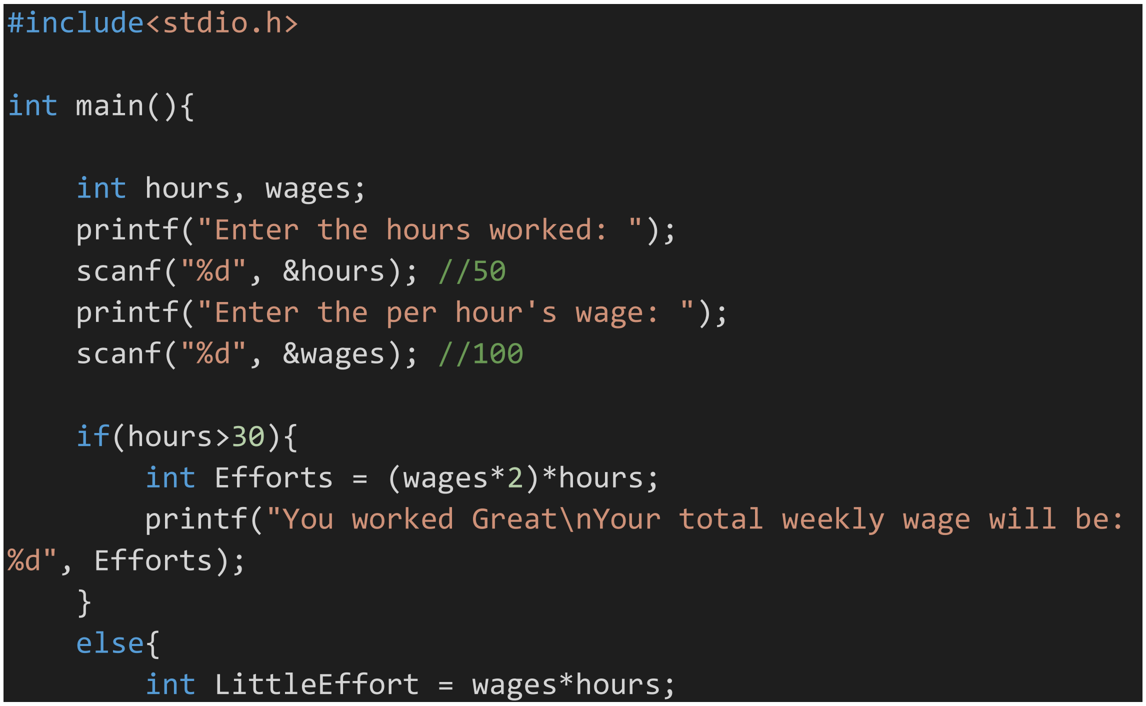
YASH RAJ SRIVASTAVA ROLL NO-71 SEC- AU-2 BTECH-CS COMPUTER ASSINGMENT

A1:



```
#include<stdio.h>

int main(){

    float rateoftax, price;
    printf("Enter rate and price: ");
    scanf("%f %f",&rateoftax,&price);

    float taxed = (rateoftax/100)*price;
    float sum = taxed + price;
    printf("The price of a product is: %f",
sum);
    return 0;
}
```

A2:



```
#include<stdio.h>

int main(){

    int hours, wages;
    printf("Enter the hours worked: ");
    scanf("%d", &hours); //50
    printf("Enter the per hour's wage: ");
    scanf("%d", &wages); //100

    if(hours>30){
        int Efforts = (wages*2)*hours;
        printf("You worked Great\nYour total weekly wage will be:
%d", Efforts);
    }
    else{
        int LittleEffort = wages*hours;
        printf("keep it up!\nYour total weekly wage is: %d", 
LittleEffort);
    }

    return 0;
}
```

A3:

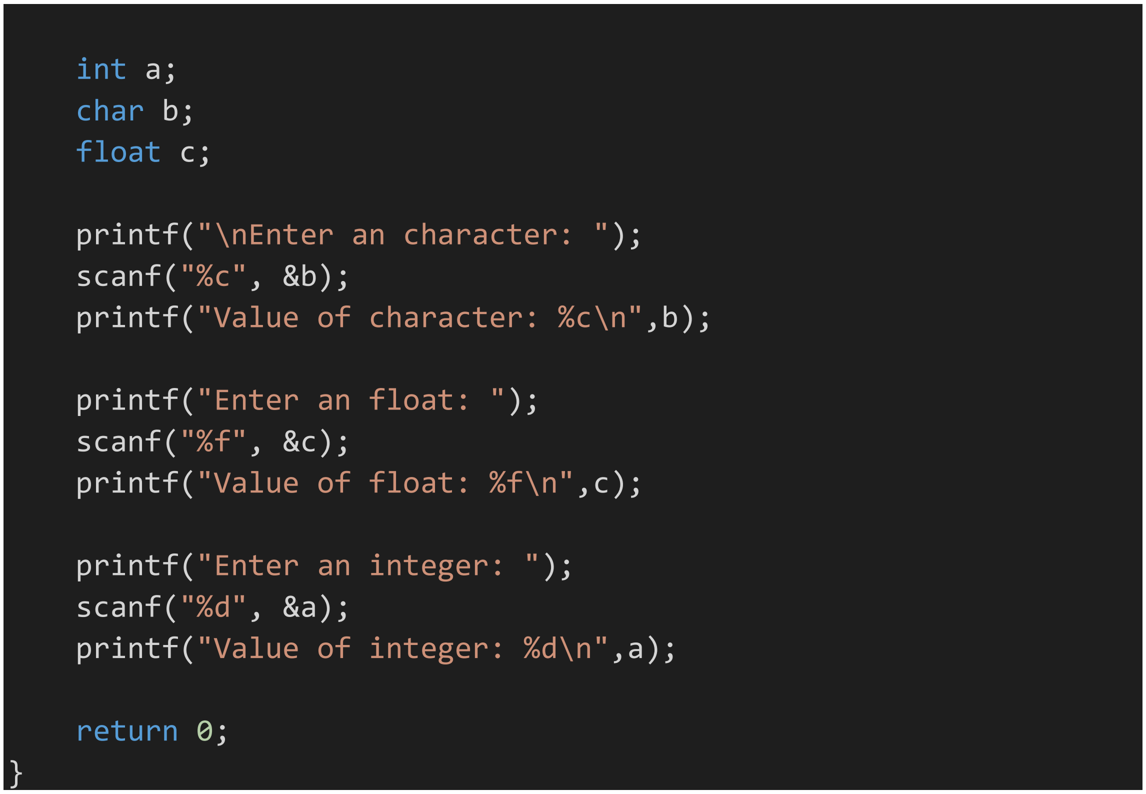
```
#include<stdio.h>

int main(){

    float apple,mango,potato,tomato;
    apple = 2 * 50;
    mango = 1.5 * 35;
    potato = 10 * 2.5;
    tomato = 1 * 15;

    float total = apple + mango + potato + tomato;
    float balance = 500-total;
    printf ("The balance amount is: %f",balance);

    return 0;
}
```

A4:

```
#include<stdio.h>

int main(){

    printf("NAME:- Yash raj Srivastava");
    printf("\nD.O.B:- 27/12/2004");
    printf("\nMOBILE NUMBER:- 6386159763");
    return 0;
}
```

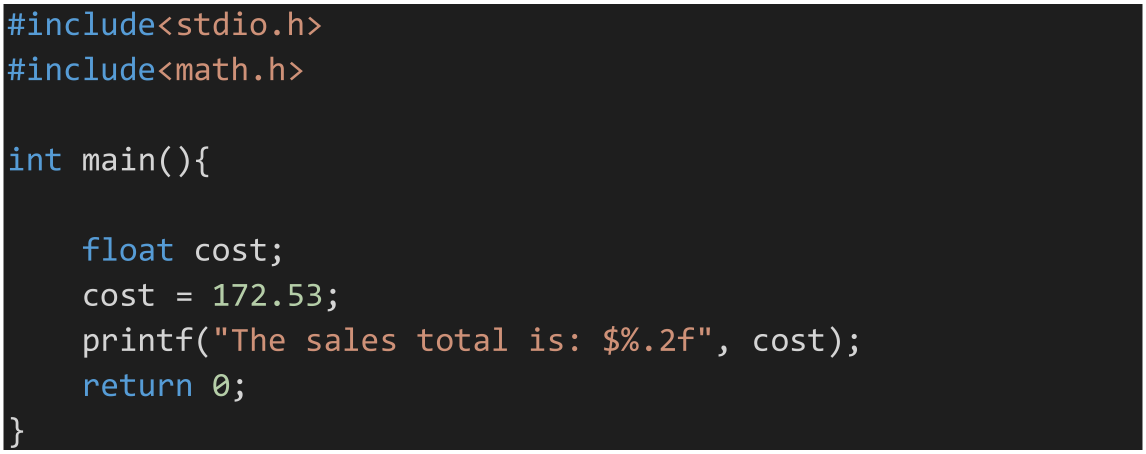
A5:

```
#include<stdio.h>

int main(){
```



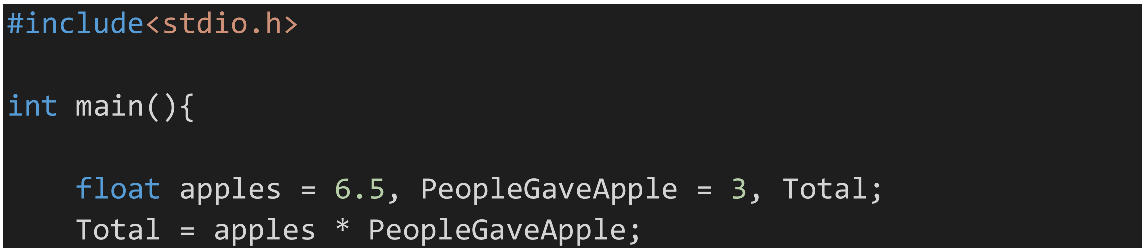
```
    int a;
    char b;
    float c;

    printf("\nEnter an character: ");
    scanf("%c", &b);
    printf("Value of character: %c\n",b);

    printf("Enter an float: ");
    scanf("%f", &c);
    printf("Value of float: %f\n",c);

    printf("Enter an integer: ");
    scanf("%d", &a);
    printf("Value of integer: %d\n",a);

    return 0;
}
```

A6:



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

int main(){

    float cost;
    cost = 172.53;
    printf("The sales total is: $%.2f", cost);
    return 0;
}
```

A7:



```
#include<stdio.h>

int main(){

    float apples = 6.5, PeopleGaveApple = 3, Total;
    Total = apples * PeopleGaveApple;
    printf("Raju got %.2f apples", Total);
    return 0;
}
```

A8:

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

int main(){

    float value = 1234.456f;
    printf("value: %f\n",value);
    printf("value: %e\n",value);


    return 0;
}
```

A9:

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

int main(){

    long long int number;
    printf("Enter a number: ");
    scanf("%lld", &number);
    printf("The number is: %lld", number);


    return 0;
}
```

A10:

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

```
int main(){

    float population = 30000, ratefirstyear = 20;
    float population_increased_firstyear = (ratefirstyear/100) *
population ;
    float total_population_after_firstyear =
population_increased_firstyear + population;

    float population2 = total_population_after_firstyear,
ratesecondyear = 30;
    float population_increased_secondyear =(ratesecondyear/100) *
population2;
    float total_population_after_secondyear =
population_increased_secondyear + population2;

    printf("Total population after 2 years is %.0f",
total_population_after_secondyear);
    return 0;
}
```

A11:

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

int main(){

    char c;
    printf("Enter a charcter: ");
    scanf("%c", &c);
    printf("ASCII value of %c = %d", c , c);
    return 0;
}
```

A12:

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

int main(){

   int basicpay;
   printf(" Enter the amount of basicpay=");
   scanf("%d",& basicpay);
   float HRA= (15 * basicpay)/100;
   float TA = (20 * basicpay)/100;
   int total_salary = basicpay + HRA + TA;
   printf("The total salary of the employee is: %d",
total_salary);
    return 0;
}
```

A13:

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

int main(){

    double xp, yp, xq, yq;

    // Input coordinates of points P and Q
    printf("Enter the coordinates of point P (xp yp): ");
    scanf("%lf %lf", &xp, &yp);

    printf("Enter the coordinates of point Q (xq yq): ");
    scanf("%lf %lf", &xq, &yq);

    // Calculate the slope of the line
    double slope = (yq - yp) / (xq - xp);

    // Calculate the angle of inclination in radians
    double angle = atan(slope);

    // Convert radians to degrees
    double angle_deg = angle * (180.0 / 3.14);

    printf("The slope of the line passing through P and Q is: %.2lf\n",
slope);
    printf("The angle of inclination in degrees is: %.2lf\n", angle_deg);



    return 0;
}
```

A14:

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

int main(){

    int k = 5;  // Number of courses
    double g1, g2, g3, g4, g5;  // Grade points for the five courses
    double c1, c2, c3, c4, c5;  // Credits for the five courses
    double spi;  // Semester Performance Index

    // Input grade points and credits for each course
    printf("Enter grade points for 5 courses (g1 g2 g3 g4 g5): ");
    scanf("%lf %lf %lf %lf %lf", &g1, &g2, &g3, &g4, &g5);

    printf("Enter credits for 5 courses (c1 c2 c3 c4 c5): ");
    scanf("%lf %lf %lf %lf %lf", &c1, &c2, &c3, &c4, &c5);

    // Calculate SPI using the formula
    spi = (g1 * c1 + g2 * c2 + g3 * c3 + g4 * c4 + g5 * c5) / (c1 + c2 + c3 +
c4 + c5);

    // Print the calculated SPI
    printf("The Semester Performance Index (SPI) for 5 courses is: %.2lf\n",
spi);



    return 0;
}
```

A15:

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

int main(){

    double wavelength, speed, frequency;

    // Input wavelength (λ) and speed (c)
    printf("Enter the wavelength (λ) in meters: ");
    scanf("%lf", &wavelength);

    printf("Enter the speed (c) of the wave in meters per second: ");
    scanf("%lf", &speed);

    // Calculate frequency (f) using the formula f = c / λ
    frequency = speed / wavelength;

    // Display the calculated frequency
    printf("The frequency (f) of the wave is %.2lf Hz.\n", frequency);



    return 0;
}
```

A16:

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

int main(){

    double u = 30.0;  // Initial velocity in m/s
    double a = 5.0;   // Acceleration in m/s^2
    double s = 70.0;  // Distance in meters
    double v;         // Final velocity to be calculated

    // Calculate the final velocity using the kinematic equation
    v = sqrt(u * u + 2 * a * s);

    printf("The final velocity of the car is %.2lf m/s\n", v);


    return 0;
}
```

A17:

```
#include <stdio.h>

int main() {
    double u = 0;    // Initial velocity
    double a = 4;    // Acceleration
    double t = 3;    // Time

    double v = u + (a * t);  // Final velocity

    printf("The final velocity of the horse is %.2lf m/s.\n", v);

        double u = 0;    // Initial velocity
    double a = 4;    // Acceleration
    double t = 3;    // Time

    double s = u * t + 0.5 * a * t * t;  // Distance traveled
    printf("The horse has traveled %.2lf meters.\n", s);

    return 0;
}
```

A18:

```
#include <stdio.h>

int main() {
    // Replace '12345678' with your actual university roll number
    int rollNumber = 12345678;
    int sum = 0;

    // Extract and sum the last four digits
    for (int i = 0; i < 4; i++) {
        sum += rollNumber % 10;
        rollNumber /= 10;
    }

    printf("The sum of the last four digits of your university roll number is
%d.\n", sum);

    return 0;
}
```

A19:

```
#include <stdio.h>

int main() {
    double heightInCm = 175;  // Replace with your actual height in
centimeters
    double weightInKg = 70;   // Replace with your actual weight in kilograms

    // Convert height to feet (1 cm = 0.393701 inch)
    double heightInInches = heightInCm * 0.393701;
    double heightInFeet = heightInInches / 12;

    // Convert weight to pounds (1 kg = 2.20462 pounds)
    double weightInPounds = weightInKg * 2.20462;

    printf("Height: %.2lf feet\n", heightInFeet);
    printf("Weight: %.2lf pounds\n", weightInPounds);

    return 0;
}
```

A20:

a) A character variable named `option`:
   char option;

b) An integer variable `sum` initialized to 0:
   int sum = 0;

c) A floating-point variable `product` initialized to 1:
   float product = 1.0;

A21:

```
#include<stdio.h>

int main ()
{int numbers[9];

    // Read nine integers from the user
    printf("Enter nine integers:\n");
    for (int i = 0; i < 9; i++) {
        scanf("%d", &numbers[i]);
    }

    // Display the numbers in groups of three separated by commas
    printf("\nNumbers in groups of three separated by commas:\n");
    for (int i = 0; i < 9; i += 3) {
        printf("%d, %d, %d\n", numbers[i], numbers[i + 1], numbers[i + 2]);



}
```

A22:

```
Header files in C are files containing declarations, function prototypes, and
definitions needed for a program. They enable code organization, facilitate
code reuse, encapsulate implementation details, and ensure proper function
usage through prototypes. Commonly used header files include <stdio.h>,
<stdlib.h>, <string.h>, and <math.h>.
```

A23:

56, 70, 38

A24:

A25:

Library functions in C are pre-defined functions provided by the C Standard Library to perform common tasks. They save time by offering ready-made solutions for various operations. Here are four commonly used C library functions:

1. **printf()**: Used for formatted output to display information on the console.
2. **scanf()**: Used for formatted input, allowing the program to read data from the user.
3. **strlen()**: Computes the length of a string.
4. **malloc()**: Allocates dynamic memory during program execution, commonly used for creating data structures like arrays and linked lists.

A26:

33 41 21

A27:

```
The statement reads two integers into variables a and b using the format
"%d%d" and then prints the number of successfully read integers (either 0, 1,
or 2) using printf. It won't display the actual values of a or b.
```

A28:

"C % FOR % PLACEMENT"

A29:

```c
#include <stdio.h>
int main()
{
    int m, t=4;
    printf("Enter the distance: ");
    scanf("%d", &m);

    int speed = m/t;
    printf("The speed of bus is: %d km/h", speed);

    return 0;
}
```

A30:

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

    int satyam = 50, suman  = 70, shyam = 80;
    int average = (satyam + suman + shyam)/3;
    printf("The average marks of these students are: %d", average);

    return 0;
}
```

A31:

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

    int saurav = 100, sajal = 50;
    saurav = saurav - sajal;
    sajal = sajal + saurav;
    saurav = sajal - saurav;

    printf("Money to saurav: %d, Money to sajal: %d", saurav, sajal);

    return 0;
}
```

A32:

```
#include <stdio.h>
int main()
{
    float s = 66.67; // changes the value of km/h into metre/minute
    float t = 3;

    float distance = s*t;
    printf("The distance traveled is: %.1f m", distance);

    return 0;
}
```

A33:

Yes, Example:- `printf("This is new line\nand this is space\tHELLO!");`

A34:

Comments in C are non-executable lines used for documentation and clarification within code. They help programmers add explanations, notes, or instructions for themselves or others. To insert a comment in a C program, use:

Double slashes (//) for single-line comments: // This is a comment.

```
Enclose multi-line comments between /* and */:
arduino
Copy code
/*
   This is a
   multi-line comment.
*/
Comments are ignored by the compiler and do not affect the program's functionality.
```

A35:

There is no amoercent(&)

A36:

Output will be “Yes”

A37:

gross-salary INTEREST , salary of emp , avg. - INVALID
thereisbookinmysoup -VALID

A38:

```
#include <stdio.h>

int main() {

// Define the variables
    float tankSize = 175.0; // in gallons
    float drainageRate = 25.0; // in gallons per hour

    // Calculate the time required to drain the tank completely
    float timeRequired = tankSize / drainageRate; // in hours

    // Convert the time to hours and minutes
    int hours = (int)timeRequired;
    int minutes = (int)((timeRequired - hours) * 60);

    // Display the results
    printf("To completely clean a %.1f-gallon tank at a rate of %.1f gallons per hour,\n",
tankSize, drainageRate);
    printf("Tom will need approximately %d hours and %d minutes.\n", hours, minutes);

    return 0;
}
```

A39:

```
#include <stdio.h>

int main() {
    // Define the variables
    float batteryPercentage = 0.75; // 75% in decimal form

    // Calculate the number of hours required
    float hoursRequired = (1 - batteryPercentage) / -0.2;

    // Display the result
    printf("The battery power will be at %.0f%% after approximately %.1f hours.\n",
batteryPercentage * 100, hoursRequired);

    return 0;
}
```

A40:

A. Compiler.

A41:

A.%o

A42:

A. %e

A43:

b. Array

A44:

a. hello7

A45:

d. Garbage,5

A46:

b. Basic_pay

A47:

a. c1

A48:

A) $(101101.100011)_2$
B) $(705.51463)_8$
C) $(142C.1EB8)_{16}$
D) (43.31)5
E) $(2152)_7$

A49:

$(125.9444)_{10}$
$(4793.9140625)_{10}$
$(482.90625)_{10}$
$(44280.76953125)_{10}$

A50:

$(1101101101010110.110011010100)_2$

$(666662324)_8$

$(311321210204220)_4$

A51:

$(100111011.100010)_2$
$(315.75)_{10}$
$(1BD.2)_{16}$
$(315.75)_5$

A52:

```
In base A, (23)10 is represented as (2A + 3). Now, we want this to be equal to (17)A. So, we can set up the equation:
2A + 3 = 1A + 7
Now, solve for A:
2A - 1A = 7 - 3
A = 4
So, A = 4 makes the equation (23)10 = (17)A true.



In base A, (21)16 is represented as (2A + 1). Now, we want this to be equal to (41)A. So, we can set up the equation:
2A + 1 = 4A + 1
Now, solve for A:
2A - 4A = 1 - 1
-2A = 0
A = 0
So, A = 0 makes the equation (21)16 = (41)A true.



In base A, (32)8 is represented as (3A + 2). Now, we want this to be equal to (101)A. So, we can set up the equation:
3A + 2 = 1A^2 + 0A + 1
Now, solve for A:
1A^2 + 3A - 0A - 1 = 0
A^2 + 3A - 1 = 0
We can solve this quadratic equation using the quadratic formula:
A = (-B ± √(B^2 - 4AC)) / 2A
In this case, A = 3, B = 1, and C = -1:
A = (-3 ± √(1^2 - 4 * 1 * (-1))) / (2 * 1)
A = (-3 ± √(1 + 4)) / 2
A = (-3 ± √5) / 2
So, the solutions for A are:
A = (-3 + √5)/2 and A = (-3 - √5)/2
These are the two possible values of A that make the equation (32)8 = (101)A true.
```

A53:

The given program assigns the value 32770 to an integer variable `a`. However, since an integer typically uses 2 bytes, its range is often limited to -32,768 to 32,767 for signed integers in many systems.

In this case, you have assigned a value that is outside the range of a 2-byte signed integer. Therefore, you are likely to encounter an overflow, and the behavior is undefined.

The actual output of this program can vary depending on the compiler and system you are using. Some compilers might wrap around the value, and you might see unexpected results. To ensure predictable behavior, you should use data types that can represent the values you intend to use without overflow.

A54:

"Temperature in Fahrenheit is 41.00"