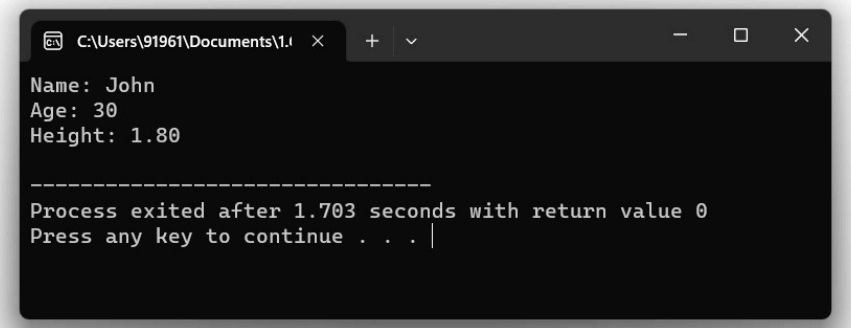
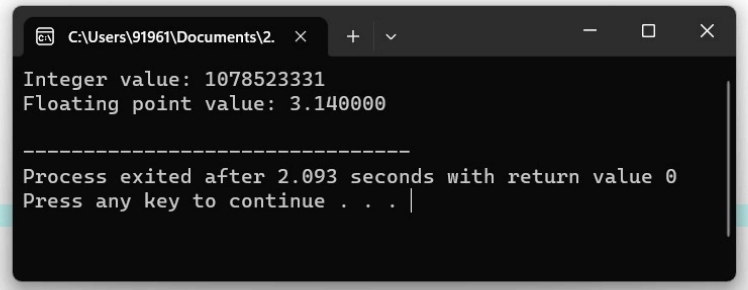
1.CLASSWORK 4.cpp

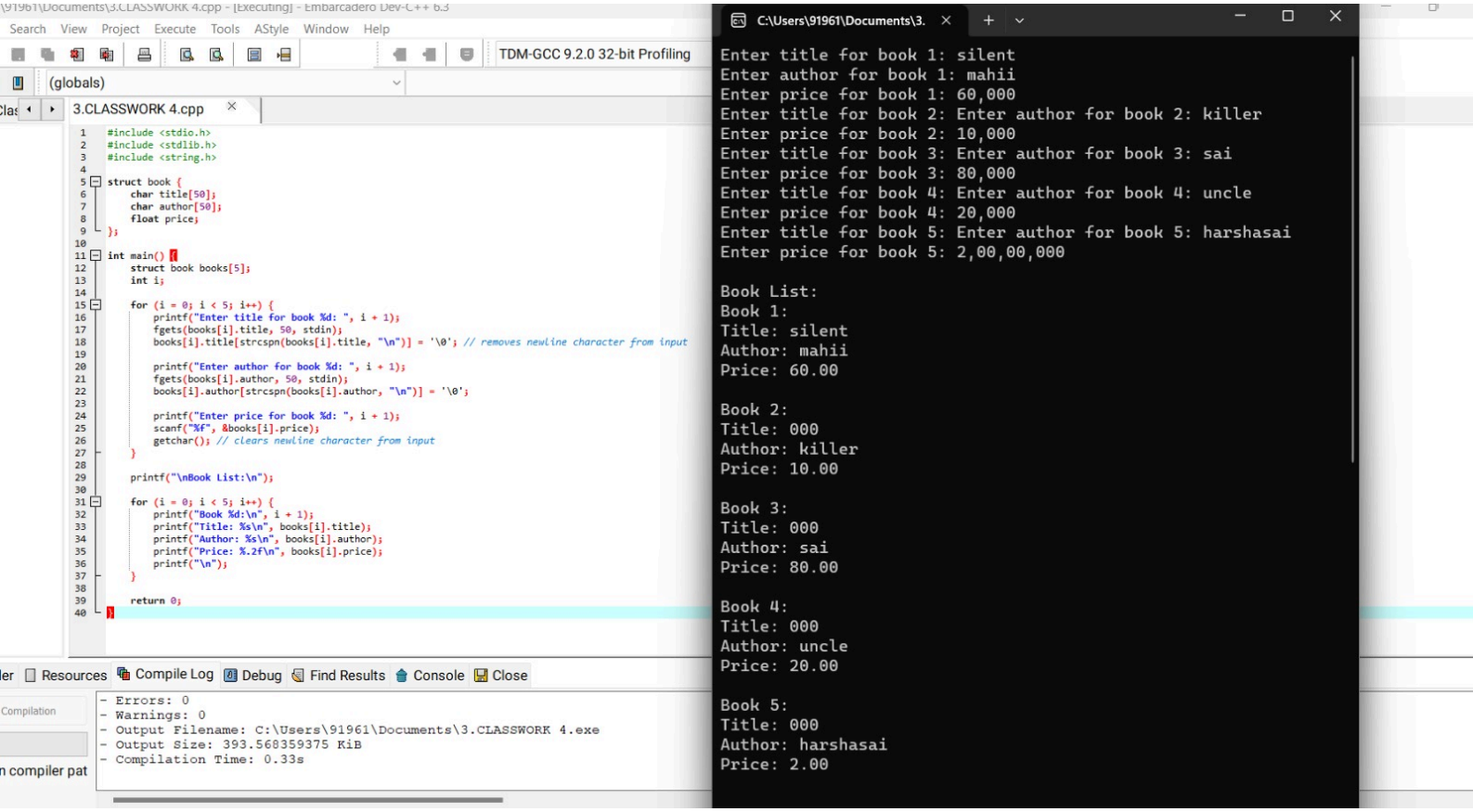
```c
#include <stdio.h>

// Define the Person structure
struct person {
    char name[50];
    int age;
    float height;
};

int main() {
    // Create a person object
    struct person p = {"John", 30, 1.8};

    // Print the person's information
    printf("Name: %s\n", p.name);
    printf("Age: %d\n", p.age);
    printf("Height: %.2f\n", p.height);

    return 0;
}
```



2.CLASSWORK 4.cpp

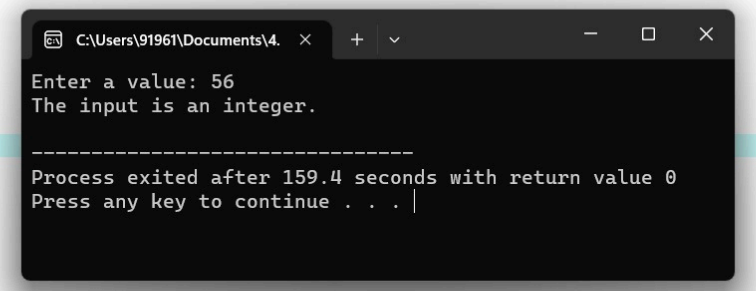
```c
#include <stdio.h>

union my_union {
  int integer;
  float floating_point;
};

int main() {
  union my_union my_variable;
  my_variable.integer = 42;
  my_variable.floating_point = 3.14;
  printf("Integer value: %d\n", my_variable.integer);
  printf("Floating point value: %f\n", my_variable.floating_point);
  return 0;
}
```




Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 32-bit Profiling
(globals)
3.CLASSWORK 4.cpp
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
struct book {
char title[50];
char author[50];
float price;
};
int main() {
struct book books[5];
int i;
for (i = 0; i < 5; i++) {
printf("Enter title for book %d: ", i + 1);
fgets(books[i].title, 50, stdin);
books[i].title[strcspn(books[i].title, "\n")] = '\0'; // removes newline character from input
printf("Enter author for book %d: ", i + 1);
fgets(books[i].author, 50, stdin);
books[i].author[strcspn(books[i].author, "\n")] = '\0';
printf("Enter price for book %d: ", i + 1);
scanf("%f", &books[i].price);
getchar(); // clears newline character from input
}
printf("\nBook List:\n");
for (i = 0; i < 5; i++) {
printf("Book %d:\n", i + 1);
printf("Title: %s\n", books[i].title);
printf("Author: %s\n", books[i].author);
printf("Price: %.2f\n", books[i].price);
printf("\n");
}
return 0;
}
Resources
Compile Log
Debug
Find Results
Console
Close
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\91961\Documents\3.CLASSWORK 4.exe
- Output Size: 393.568359375 KiB
- Compilation Time: 0.33s
C:\Users\91961\Documents\3.
Enter title for book 1: silent
Enter author for book 1: mahii
Enter price for book 1: 60,000
Enter title for book 2: Enter author for book 2: killer
Enter price for book 2: 10,000
Enter title for book 3: Enter author for book 3: sai
Enter price for book 3: 80,000
Enter title for book 4: Enter author for book 4: uncle
Enter price for book 4: 20,000
Enter title for book 5: Enter author for book 5: harshasai
Enter price for book 5: 2,00,00,000
Book List:
Book 1:
Title: silent
Author: mahii
Price: 60.00
Book 2:
Title: 000
Author: killer
Price: 10.00
Book 3:
Title: 000
Author: sai
Price: 80.00
Book 4:
Title: 000
Author: uncle
Price: 20.00
Book 5:
Title: 000
Author: harshasai
Price: 2.00

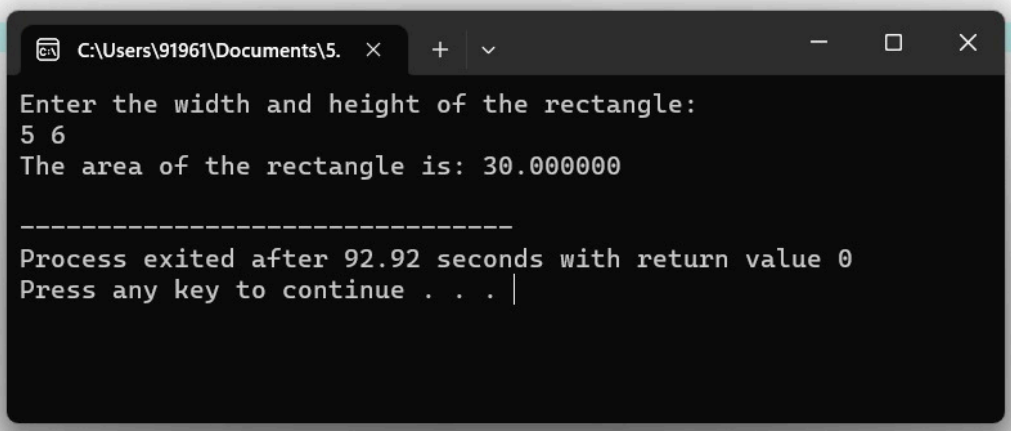
4.classwork 4.cpp

```c
#include <stdio.h>

union my_data {
    int integer;
    float floating_point;
};

int main() {
    union my_data data;
    printf("Enter a value: ");
    if (scanf("%d", &data.integer) == 1) {
        printf("The input is an integer.\n");
    } else {
        printf("The input is not an integer.\n");
    }
    return 0;
}
```



5.classwork 4.cpp

```c
#include <stdio.h>

typedef struct {
    float width;
    float height;
} Rectangle;

int main() {
    Rectangle rect;
    printf("Enter the width and height of the rectangle:\n");
    scanf("%f %f", &rect.width, &rect.height);
    float area = rect.width * rect.height;
    printf("The area of the rectangle is: %f\n", area);
    return 0;
}
```



6.classWORK4.cpp

```c
#include <stdio.h>
#include <stdlib.h>

struct employee {
    char name[50];
    float salary;
    int age;
};

int main() {
    struct employee employees[3];

    // Prompt the user to enter the information for each employee
    for (int i = 0; i < 3; i++) {
        printf("Enter the name of employee %d: ", i+1);
        scanf("%s", employees[i].name);
        printf("Enter the salary of employee %d: ", i+1);
        scanf("%f", &employees[i].salary);
        printf("Enter the age of employee %d: ", i+1);
        scanf("%d", &employees[i].age);
    }

    // Print out the information for each employee
    for (int i = 0; i < 3; i++) {
        printf("Employee %d\n", i+1);
        printf("Name: %s\n", employees[i].name);
        printf("Salary: %.2f\n", employees[i].salary);
        printf("Age: %d\n", employees[i].age);
    }

    return 0;
}
```

C:\Users\91961\Documents\6.

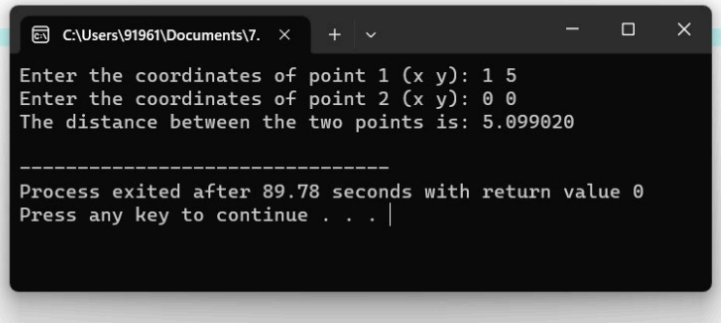
```
Enter the name of employee 1: dayam
Enter the salary of employee 1: 10
Enter the age of employee 1: 101
Enter the name of employee 2: harshasai
Enter the salary of employee 2: 1
Enter the age of employee 2: 100
Enter the name of employee 3: sai mohith
Enter the salary of employee 3: Enter the age of employee 3: Employee 1
Name: dayam
Salary: 10.00
Age: 101
Employee 2
Name: harshasai
Salary: 1.00
Age: 100
Employee 3
Name: sai
Salary: 0.00
Age: 0

--------------------------------
Process exited after 140.3 seconds with return value 0
Press any key to continue . . .
```

Resources | Compile Log | Debug | Find Results | Console | Close

```
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\91961\Documents\6.classWORK4.exe
```

7.classwork 4.cpp

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

struct point {
    float x;
    float y;
};

int main() {
    struct point p1, p2;
    float dist;

    printf("Enter the coordinates of point 1 (x y): ");
    scanf("%f %f", &p1.x, &p1.y);

    printf("Enter the coordinates of point 2 (x y): ");
    scanf("%f %f", &p2.x, &p2.y);

    dist = sqrt(pow((p2.x - p1.x), 2) + pow((p2.y - p1.y), 2));

    printf("The distance between the two points is: %f\n", dist);

    return 0;
}
```



8.classwork4.cpp

```c
#include <stdio.h>

union my_union {
  int integer;
  float floating_point;
};

int main() {
  union my_union array[5];
  float total = 0.0;

  for (int i = 0; i < 5; i++) {
    printf("Enter an integer or floating-point value for union %d: ", i+1);
    scanf("%d", &array[i].integer);
    scanf("%f", &array[i].floating_point);
  }

  for (int i = 0; i < 5; i++) {
    if (sizeof(array[i]) == sizeof(int)) {
      total += (float)array[i].integer;
    } else {
      total += array[i].floating_point;
    }
  }

  printf("The total value of all unions is: %f\n", total);

  return 0;
}
```

C:\Users\91961\Documents\8.

```
Enter an integer or floating-point value for union 1: 123456789
567
Enter an integer or floating-point value for union 2: 12345
78
Enter an integer or floating-point value for union 3: 4567
9089
Enter an integer or floating-point value for union 4: 678
567
Enter an integer or floating-point value for union 5: 345
90876
The total value of all unions is: 5779161600.000000

--------------------------------
Process exited after 48.26 seconds with return value 0
Press any key to continue . . .
```

9.classwork 4.cpp

```c
#include <stdio.h>

struct student {
    char name[50];
    int id;
    float gpa;
};

int main() {
    struct student s[3];
    int i;

    for (i = 0; i < 3; i++) {
        printf("Enter the name of student %d: ", i+1);
        scanf("%s", s[i].name);
        printf("Enter the ID of student %d: ", i+1);
        scanf("%d", &s[i].id);
        printf("Enter the GPA of student %d: ", i+1);
        scanf("%f", &s[i].gpa);
    }

    printf("\nStudent Information:\n");
    for (i = 0; i < 3; i++) {
        printf("Student %d:\n", i+1);
        printf("Name: %s\n", s[i].name);
        printf("ID: %d\n", s[i].id);
        printf("GPA: %.2f\n", s[i].gpa);
    }

    return 0;
}
```

C:\Users\91961\Documents\9.

```
Enter the name of student 1: lilly
Enter the ID of student 1: 2
Enter the GPA of student 1: 100
Enter the name of student 2: rosy
Enter the ID of student 2: 3
Enter the GPA of student 2: 99
Enter the name of student 3: ishu
Enter the ID of student 3: 4
Enter the GPA of student 3: 98

Student Information:
Student 1:
Name: lilly
ID: 2
GPA: 100.00
Student 2:
Name: rosy
ID: 3
GPA: 99.00
Student 3:
Name: ishu
ID: 4
GPA: 98.00

--------------------------------
Process exited after 113 seconds with return value 0
Press any key to continue . . .
```

Resources | Compile Log | Debug | Find Results | Console | Close

```
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\91961\Documents\9.classwork 4.exe
- Output Size: 375.84375 KiB
- Compilation Time: 0.36s
```

10.classwork 4.cpp

```c
#include <stdio.h>
#include <string.h>

struct book {
    char title[50];
    char author[50];
    int publication_year;
    float price;
};

void display_new_books(struct book books[], int n) {
    printf("New Books:\n");
    for (int i = 0; i < n; i++) {
        if (books[i].publication_year > 2010) {
            printf("Title: %s\n", books[i].title);
            printf("Author: %s\n", books[i].author);
            printf("Publication Year: %d\n", books[i].publication_year);
            printf("Price: %.2f\n\n", books[i].price);
        }
    }
}

int main() {
    struct book books[4] = {
        {"The Hunger Games", "Suzanne Collins", 2008, 12.99},
        {"Harry Potter and the Deathly Hallows", "J.K. Rowling", 2007, 14.99},
        {"The Girl with the Dragon Tattoo", "Stieg Larsson", 2005, 9.99},
        {"The Help", "Kathryn Stockett", 2009, 8.99}
    };

    display_new_books(books, 4);

    return 0;
}
```

```
C:\Users\91961\Documents\10
New Books:

--------------------------------
Process exited after 2.198 seconds with return value 0
Press any key to continue . . .
```

11.classwork 4.cpp

```cpp
struct employee {
    char name[50];
    int age;
    float salary;
    char department[50];
};

// Function to display information for qualifying employees
void display_sales_employees(struct employee employees[], int num_employees) {
    for (int i = 0; i < num_employees; i++) {
        // Check if the employee works in the Sales department and earns more than $50,000
        if (strcmp(employees[i].department, "Sales") == 0 && employees[i].salary > 50000.0) {
            printf("Name: %s\n", employees[i].name);
            printf("Age: %d\n", employees[i].age);
            printf("Salary: $%.2f\n", employees[i].salary);
            printf("Department: %s\n", employees[i].department);
            printf("\n");
        }
    }
}

int main() {
    // Example usage: create an array of employee structures and call the display_sales_employees function
    struct employee employees[MAX_EMPLOYEES] = {
        {"John Smith", 30, 60000.0, "Sales"},
        {"Jane Doe", 25, 45000.0, "Marketing"},
        {"Bob Johnson", 45, 75000.0, "Sales"}
        // Add more employees as needed
    };
    int num_employees = 3; // Set the number of employees in the array

    display_sales_employees(employees, num_employees); // Call the function to display qualifying employees

    return 0;
}
```

```
C:\Users\91961\Documents\11
Name: John Smith
Age: 30
Salary: $60000.00
Department: Sales

Name: Bob Johnson
Age: 45
Salary: $75000.00
Department: Sales


--------------------------------
Process exited after 1.679 seconds with return value 0
Press any key to continue . . .
```

Resources | Compile Log | Debug | Find Results | Console | Close

12.classwork 4.cpp

```c
#include <stdio.h>
#include <stdlib.h>

struct person {
    char name[100];
    int age;
    char address[100];
};

int main() {
    struct person people[3];

    // Prompt the user to enter the information for each person
    for (int i = 0; i < 3; i++) {
        printf("Enter name, age, and address for person %d:\n", i + 1);
        scanf("%s %d %[^\n]", people[i].name, &people[i].age, people[i].address);
    }

    // Display the information for all three people
    for (int i = 0; i < 3; i++) {
        printf("Person %d:\n", i + 1);
        printf("Name: %s\n", people[i].name);
        printf("Age: %d\n", people[i].age);
        printf("Address: %s\n", people[i].address);
    }

    return 0;
}
```

C:\Users\91961\Documents\12

```
Enter name, age, and address for person 1:
chinni
1
chennai
Enter name, age, and address for person 2:
ammu
2
atp
Enter name, age, and address for person 3:
yash
3
mosco
Person 1:
Name: chinni
Age: 1
Address: chennai
Person 2:
Name: ammu
Age: 2
Address: atp
Person 3:
Name: yash
Age: 3
Address: mosco

--------------------------------
Process exited after 122 seconds with return value 0
Press any key to continue . . .
```

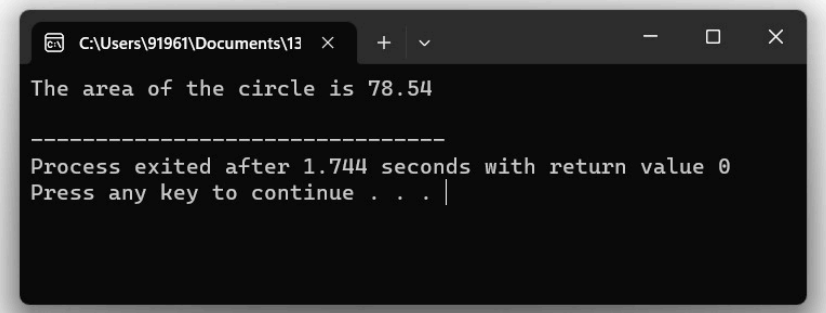
Resources | Compile Log | Debug | Find Results | Console | Close

```
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\91961\Documents\12.classwork 4.exe
- Output Size: 391.673828125 KiB
- Compilation Time: 0.27s
```

pat

13.classwork 4.cpp

```c
#include <stdio.h>

struct point {
  int x;
  int y;
};

struct circle {
  float radius;
  struct point center;
};

float area_of_circle(struct circle c) {
  return 3.14159 * c.radius * c.radius;
}

int main() {
  struct circle c = { 5.0, { 0, 0 } };
  float area = area_of_circle(c);
  printf("The area of the circle is %.2f\n", area);
  return 0;
}
```



14.classwork 4.cpp

```c
#include <stdio.h>
#include <string.h>

// Define the "employee" structure
struct employee {
    char name[50];
    int age;
    float salary;
    char department[50];
};

// Function to print sales employees with salary greater than $50,000
void print_sales_employees(struct employee emp_array[], int num_employees) {
    int i;
    for (i = 0; i < num_employees; i++) {
        // Check if the employee works in the "Sales" department and has a salary > $50,000
        if (strcmp(emp_array[i].department, "Sales") == 0 && emp_array[i].salary > 50000) {
            printf("Name: %s\n", emp_array[i].name);
            printf("Age: %d\n", emp_array[i].age);
            printf("Salary: $%.2f\n", emp_array[i].salary);
            printf("Department: %s\n\n", emp_array[i].department);
        }
    }
}

// Main function to test the "print_sales_employees" function
int main() {
    // Create an array of employee structures
    struct employee emp_array[5] = {
        {"John Doe", 35, 75000.0, "Sales"},
        {"Jane Smith", 28, 45000.0, "Marketing"},
        {"Bob Johnson", 42, 60000.0, "Sales"},
        {"Mike Davis", 39, 55000.0, "Sales"},
        {"Karen Lee", 31, 80000.0, "Engineering"}
    };

    // Call the "print_sales_employees" function
    print_sales_employees(emp_array, 5);

    return 0;
}
```

```
C:\Users\91961\Documents\14

Name: John Doe
Age: 35
Salary: $75000.00
Department: Sales

Name: Bob Johnson
Age: 42
Salary: $60000.00
Department: Sales

Name: Mike Davis
Age: 39
Salary: $55000.00
Department: Sales


--------------------------------
Process exited after 1.808 seconds with return value 0
Press any key to continue . . .
```

15.classwork 4.cpp

```c
#include <stdio.h>
#include <string.h>

// Define the union for hourly wage
union HourlyWage {
    float dollars;
    int cents;
};

// Define the employee struct
struct Employee {
    char name[50];
    int id;
    union HourlyWage wage;
};

int main() {
    struct Employee emp;

    // Get employee information from user
    printf("Enter employee name: ");
    scanf("%s", emp.name);

    printf("Enter employee ID: ");
    scanf("%d", &emp.id);

    printf("Enter hourly wage in dollars (or in cents by typing \"cents\"): ");
    char input[10];
    scanf("%s", input);

    if (strcmp(input, "cents") == 0) {
        printf("Enter hourly wage in cents: ");
        scanf("%d", &emp.wage.cents);
    } else {
        printf("Enter hourly wage in dollars: ");
        scanf("%f", &emp.wage.dollars);
    }

    // Display employee information
    printf("\nEmployee Information:\n");
    printf("Name: %s\n", emp.name);
    printf("ID: %d\n", emp.id);
    printf("Hourly Wage: $%.2f\n", strcmp(input, "cents") == 0 ? emp.wage.cents / 100.0 : emp.wage.dollars);

    return 0;
}
```

```
C:\Users\91961\Documents\15
Enter employee name: anju
Enter employee ID: 0
Enter hourly wage in dollars (or in cents by typing "cents"): 7
Enter hourly wage in dollars: 8

Employee Information:
Name: anju
ID: 0
Hourly Wage: $8.00

--------------------------------
Process exited after 64.28 seconds with return value 0
Press any key to continue . . .
```

16.classwork 4.cpp

```c
#include <stdio.h>

typedef union {
    float meters;
    int inches;
} Measurement;

int main() {
    Measurement input;
    char unit;
    printf("Enter a value followed by a unit (meters(m), inches(i), feet(f), yards(y)): ");
    scanf("%f%c", &input.meters, &unit);

    switch (unit) {
        case 'm':
            input.inches = input.meters * 39.3701;
            break;
        case 'i':
            break;
        case 'f':
            input.inches = input.meters * 39.3701 / 12;
            break;
        case 'y':
            input.inches = input.meters * 39.3701 / 36;
            break;
        default:
            printf("Invalid unit.\n");
            return 1;
    }

    float meters = input.inches / 39.3701;
    float feet = input.inches / 12.0;
    float yards = input.inches / 36.0;

    printf("%.2f meters\n", meters);
    printf("%.2f inches\n", input.inches);
    printf("%.2f feet\n", feet);
    printf("%.2f yards\n", yards);

    return 0;
}
```

```
C:\Users\91961\Documents\16
Enter a value followed by a unit (meters(m), inches(i), feet(f), yards(y)): 56 30 5 2

Invalid unit.

--------------------------------
Process exited after 46.4 seconds with return value 1
Press any key to continue . . .
```

17.classwork 4.cpp

```c
#include <stdio.h>

union balance {
    float amount;
    int cents;
};

int main() {
    union balance bal;
    char name[100];
    int choice;
    float amount;
    int cents;

    printf("Enter your name: ");
    scanf("%s", name);

    printf("Enter your initial balance in dollars: ");
    scanf("%f", &bal.amount);

    do {
        printf("\n1. Deposit\n2. Withdraw\n3. Check balance\n4. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);

        switch(choice) {
            case 1:
                printf("Enter amount to deposit in dollars: ");
                scanf("%f", &amount);
                bal.amount += amount;
                break;
            case 2:
                printf("Enter amount to withdraw in dollars: ");
                scanf("%f", &amount);
                if (amount > bal.amount) {
                    printf("Insufficient balance\n");
                } else {
                    bal.amount -= amount;
                }
                break;
            case 3:
                printf("Current balance: $%.2f\n", bal.amount);
                break;
            case 4:
                printf("Exiting...\n");
                break;
            default:
                printf("Invalid choice\n");
        }
    } while(choice != 4);

    return 0;
}
```

```
Enter your name: tejaswi
Enter your initial balance in dollars: 34

1. Deposit
2. Withdraw
3. Check balance
4. Exit
Enter your choice: 2
Enter amount to withdraw in dollars: 5

1. Deposit
2. Withdraw
3. Check balance
4. Exit
Enter your choice: 1
Enter amount to deposit in dollars: 5

1. Deposit
2. Withdraw
3. Check balance
4. Exit
Enter your choice: 3
Current balance: $34.00

1. Deposit
2. Withdraw
3. Check balance
4. Exit
Enter your choice: 4
Exiting...
```

Compile Log | Debug | Find Results | Console

```
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\91961\Documents\17.cl
- Output Size: 375.84375 KiB
- Compilation Time: 0.31s
```

18 classwork 4.cpp

```c
#include <stdio.h>

// Define a union for storing the price of the product
union price {
    float f;
    int i;
};

// Define a struct for storing information about the product
struct product {
    char name[100];
    union price price;
    int quantity;
};

int main() {
    // Declare a variable of type struct product to store the product information
    struct product p;

    // Prompt the user to enter the product information
    printf("Enter the name of the product: ");
    scanf("%s", p.name);
    printf("Enter the price of the product: ");
    scanf("%f", &p.price.f);
    printf("Enter the quantity of the product: ");
    scanf("%d", &p.quantity);

    // Calculate the total cost of the product
    float total_cost = p.price.f * p.quantity;

    // Display the product information and total cost
    printf("\nProduct Name: %s\n", p.name);
    printf("Price per unit: %f\n", p.price.f);
    printf("Quantity: %d\n", p.quantity);
    printf("Total cost: %f\n", total_cost);

    return 0;
}
```

```
C:\Users\91961\Documents\18
Enter the name of the product: t
Enter the price of the product: 34
Enter the quantity of the product: 25

Product Name: t
Price per unit: 34.000000
Quantity: 25
Total cost: 850.000000

--------------------------------
Process exited after 26.92 seconds with return value 0
Press any key to continue . . .
```

19 classwork 4.cpp

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

#define PI 3.14159

typedef union {
    int i;
    float f;
} Number;

typedef struct {
    char type[20];
    Number length;
    Number width;
    Number radius;
    Number base;
    Number height;
} Shape;

int main() {
    Shape s;

    printf("Enter the type of shape: ");
    scanf("%s", s.type);

    if (strcmp(s.type, "rectangle") == 0) {
        printf("Enter the length of the rectangle: ");
        scanf("%f", &s.length.f);

        printf("Enter the width of the rectangle: ");
        scanf("%f", &s.width.f);

        float area = s.length.f * s.width.f;
        printf("The area of the rectangle is: %f\n", area);
    }
    else if (strcmp(s.type, "circle") == 0) {
        printf("Enter the radius of the circle: ");
        scanf("%f", &s.radius.f);

        float area = PI * pow(s.radius.f, 2);
        printf("The area of the circle is: %f\n", area);
    }
    else if (strcmp(s.type, "triangle") == 0) {
        printf("Enter the base of the triangle: ");
        scanf("%f", &s.base.f);

        printf("Enter the height of the triangle: ");
        scanf("%f", &s.height.f);

        float area = 0.5 * s.base.f * s.height.f;
        printf("The area of the triangle is: %f\n", area);
    }
    else {
        printf("Unknown shape type: %s\n", s.type);
    }

    return 0;
}
```

```
C:\Users\91961\Documents\19
Enter the type of shape: circle
Enter the radius of the circle: 34
The area of the circle is: 3631.677979

--------------------------------
Process exited after 19.12 seconds with return value 0

Press any key to continue . . .
```

20 classwork 4.cpp

```c
#include <stdio.h>

union myunion {
    int i;
    float f;
};

int main() {
    union myunion u1 = { .i = 42 }; // Initializing "i" field with value 42
    printf("The value of the integer field i is: %d\n", u1.i);

    u1.f = 3.14; // Assigning a value to "f" field
    printf("The value of the float field f is: %f\n", u1.f);

    return 0;
}
```