**PRACTICAL NUMBER 1**

**Q1. Study and implement various graphics functions and VGA standards.**

**Ans1.** Graphic Functions

1. **Initgraph():** Initializes the graphics system by loading a graphics driver.

**Syntax:** void initgraph(int \*gd, int \*gm, char \*path);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

closegraph();

return 0;

}

1. **Cleardevice():** Clears the screen and prepares it for new drawings.

**Syntax:** void cleardevice();

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

cleardevice();

closegraph();

return 0;

}

1. **Closegraph():** Closes the graphics mode and frees all allocated memory.

**Syntax:** void closegraph();

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

closegraph();

return 0;

}

1. **Detectgraph():** Detects the graphics driver and mode automatically.

**Syntax:** void detectgraph(int \*gd, int \*gm);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

detectgraph(&gd, &gm);

initgraph(&gd, &gm, "");

closegraph();

return 0;

}

1. **Line():** Draws a line between two specified points.

**Syntax:** void line(int x1, int y1, int x2, int y2);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

line(100, 100, 200, 200);

getch();

closegraph();

return 0;

}

1. **Circle():** Draws a circle with the specified center and radius.

**Syntax:** void circle(int x, int y, int radius);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

circle(250, 200, 50);

getch();

closegraph();

return 0;

}

1. **rectangle():** Draws a rectangle with specified top-left and bottom-right corners.

**Syntax:** void rectangle(int left, int top, int right, int bottom);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

rectangle(150, 150, 300, 300);

getch();

closegraph();

return 0;

}

1. **bar():** Draws a filled rectangle.

**Syntax:** void bar(int left, int top, int right, int bottom);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

bar(100, 100, 200, 200);

getch();

closegraph();

return 0;

}

1. **bar3d():** Draws a 3D filled rectangle with depth.

**Syntax:** void bar3d(int left, int top, int right, int bottom, int depth, int topflag);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

bar3d(100, 100, 200, 200, 15, 1);

getch();

closegraph();

return 0;

}

1. **arc():** Draws an arc with the specified center, start angle, end angle, and radius.

**Syntax:** void arc(int x, int y, int stangle, int endangle, int radius);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

arc(300, 200, 0, 180, 50);

getch();

closegraph();

return 0;

}

1. **ellipse():** Draws an ellipse with the specified center, start angle, end angle, and radii.

**Syntax:** void ellipse(int x, int y, int stangle, int endangle, int xradius, int yradius);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

ellipse(320, 240, 0, 360, 100, 50);

getch();

closegraph();

return 0;

}

1. **fillellipse():** Draws and fills an ellipse with the specified center and radii.

**Syntax:** void fillellipse(int x, int y, int xradius, int yradius);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

fillellipse(320, 240, 50, 30);

getch();

closegraph();

return 0;

}

1. **setcolor():** Sets the current drawing color.

**Syntax:** void setcolor(int color);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

setcolor(RED);

line(100, 100, 200, 200);

getch();

closegraph();

return 0;

}

1. **settextstyle():** Sets the current text style, font, direction, and size.

**Syntax:** void settextstyle(int font, int direction, int charsize);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

settextstyle(DEFAULT\_FONT, HORIZ\_DIR, 2);

outtextxy(150, 250, "Hello, Graphics!");

getch();

closegraph();

return 0;

}

1. **outtextxy():** Displays text at a specified location.

**Syntax:** void outtextxy(int x, int y, char \*textstring);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

outtextxy(150, 250, "Hello, World!");

getch();

closegraph();

return 0;

}

1. **floodfill():** Fills an enclosed area starting from the specified point.

**Syntax:** void floodfill(int x, int y, int border\_color);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

rectangle(150, 150, 300, 300);

floodfill(160, 160, WHITE);

getch();

closegraph();

return 0;

}

1. **setfillstyle():** Sets the current fill pattern and color.

**Syntax:** void setfillstyle(int pattern, int color);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

setfillstyle(SOLID\_FILL, RED);

floodfill(160, 160, WHITE);

getch();

closegraph();

return 0;

}

1. **getmaxx():** Returns the maximum x-coordinate for the current graphics mode.

**Syntax:** int getmaxx();

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

int max\_x = getmaxx();

printf("Max X: %d", max\_x);

getch();

closegraph();

return 0;

}

1. **getmaxy():** Returns the maximum y-coordinate for the current graphics mode.

**Syntax:** int getmaxy();

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

int max\_y = getmaxy();

printf("Max Y: %d", max\_y);

getch();

closegraph();

return 0;

}

1. **getpixel():** Returns the color of the pixel at the specified coordinates.

**Syntax:** int getpixel(int x, int y);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

putpixel(400, 300, WHITE);

int color = getpixel(400, 300);

printf("Color: %d", color);

getch();

closegraph();

return 0;

}

1. **putpixel():** Sets a pixel at the specified coordinates with the specified color.

**Syntax:** void putpixel(int x, int y, int color);

**Example:**

#include <graphics.h>

int main() {

int gd = DETECT, gm;

initgraph(&gd, &gm, "");

putpixel(400, 300, WHITE);

getch();

closegraph();

return 0;

}