Task 2: Generate images from text

1. A classic Titan watch with a slim, rose gold case and a genuine leather strap in a rich brown color. The watch face is crisp white with elegant black Roman numerals and thin hands. A subtle Titan logo sits at the 12 o'clock position.
2. A delicate Titan watch with a mother-of-pearl dial and a sparkling crystal bezel. The watch features slender rose gold hands and a comfortable mesh bracelet that drapes elegantly on the wrist.
3. A refined Titan watch: a slim stainless-steel case reflects polished light, framing a crisp white dial with elegant black Roman numerals. A rich brown genuine leather strap completes the sophisticated look.

```
!pip install --upgrade diffusers transformers -q
```

```
# import the libraries

from pathlib import Path
import tqdm
import torch
import pandas as pd
import numpy as np
from diffusers import StableDiffusionPipeline
from transformers import pipeline, set_seed
import matplotlib.pyplot as plt
import cv2
```

```
# Class containing all the essential information

class CFG:
  device = "cpu"
  seed = 42
  generator = torch.Generator(device).manual_seed(seed)
  image_gen_steps = 30
  image_gen_model_id = "stabilityai/stable-diffusion-2"
  image_gen_size = (400,400)
  image_gen_guidance_scale = 9
  prompt_gen_model_id = "gpt2"
```

```
  prompt_dataset_size = 6
  prompt_max_lenght = 12


# Instantiation of Stable Diffusion model

image_gen_model = StableDiffusionPipeline.from_pretrained(
    CFG.image_gen_model_id, torch_dtype=torch.float32,  # Change torch_dtype to torch.float32
    revision="fp16", use_auth_token='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', guidance_scale=9)
```

```
Cannot initialize model with low cpu memory usage because `accelerate` was not found in the environment. Defaulting to `low_cpu_mem_usage=Fals
    ```
    pip install accelerate
    ```
    .
    /usr/local/lib/python3.10/dist-packages/huggingface_hub/utils/_token.py:88: UserWarning:
    The secret `HF_TOKEN` does not exist in your Colab secrets.
    To authenticate with the Hugging Face Hub, create a token in your settings tab (https://huggingface.co/settings/tokens), set it as secret in y
    You will be able to reuse this secret in all of your notebooks.
    Please note that authentication is recommended but still optional to access public models or datasets.
      warnings.warn(
    /usr/local/lib/python3.10/dist-packages/diffusers/pipelines/pipeline_loading_utils.py:212: FutureWarning: You are loading the variant fp16 fro
      warnings.warn(
    vae/diffusion_pytorch_model.safetensors not found
    Keyword arguments {'use_auth_token': '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', 'guidance_scale': 9} are not expected by StableDiffusionPipeline
```

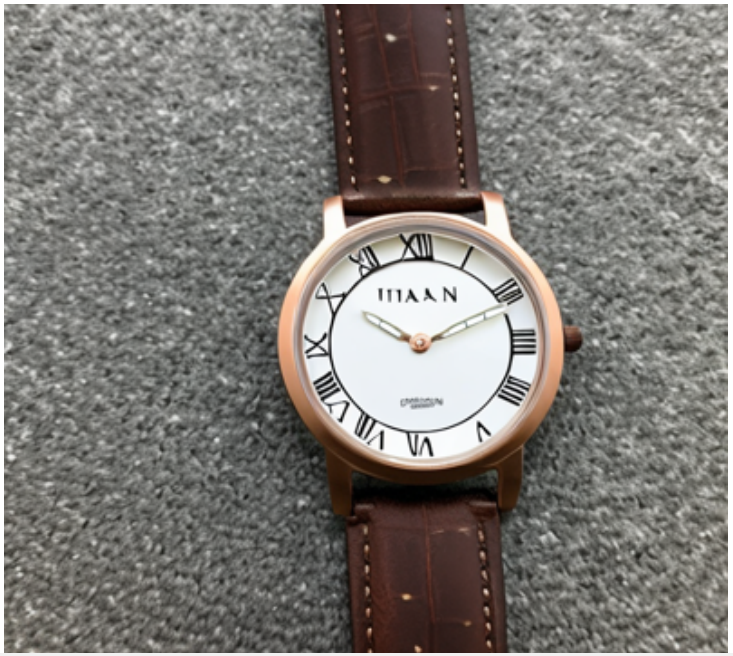
```
# Function For Image Generation

def generate_image(prompt, model):
  image = model(
      prompt, num_inference_steps=CFG.image_gen_steps,
      generator=CFG.generator,
      guidance_scale=CFG.image_gen_guidance_scale).images[0]

  image = image.resize(CFG.image_gen_size)
  return image
```

Image Generation

1. A classic Titan watch with a slim, rose gold case and a genuine leather strap in a rich brown color. The watch face is crisp white with elegant black Roman numerals and thin hands. A subtle Titan logo sits at the 12 o'clock position.

```
generate_image("A classic Titan brand watch with a slim, rose gold case and a genuine leather strap in a rich brown color. The watch face is crisp
```

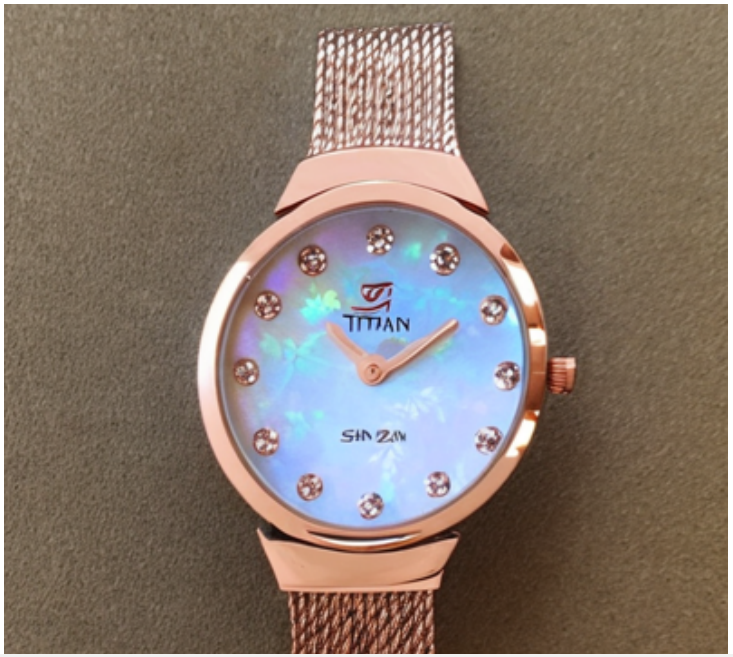
100% 30/30 [39:46<00:00, 79.72s/it]



2. A delicate Titan watch with a mother-of-pearl dial and a sparkling crystal bezel. The watch features slender rose gold hands and a comfortable mesh bracelet that drapes elegantly on the wrist.

```
generate_image("A delicate Titan brand watch with a mother-of-pearl dial and a sparkling crystal bezel. The watch features slender rose gold hands
```

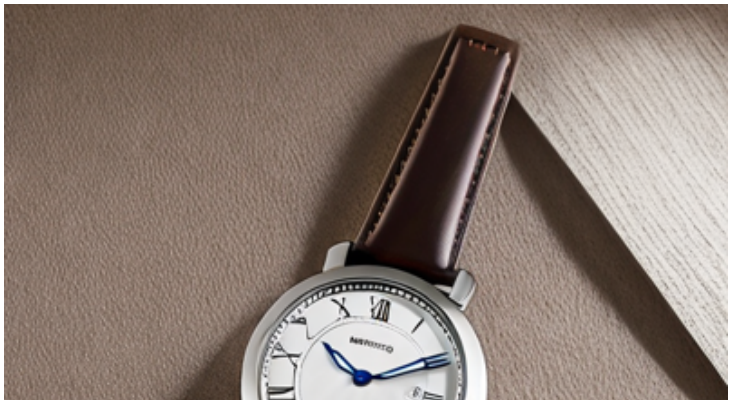
100% 30/30 [39:55<00:00, 80.01s/it]



3. A refined Titan watch: a slim stainless-steel case reflects polished light, framing a crisp white dial with elegant black Roman numerals. A rich brown genuine leather strap completes the sophisticated look.

```
generate_image("A refined Titan watch: a slim stainless-steel case reflects polished light, framing a crisp white dial with elegant black Roman nu
```

100% 30/30 [40:31<00:00, 80.76s/it]



Conclusion

For this task I used stable diffusion model to generate images from given text. first I created a class containing all the essential information, then I instantiate a stable diffusion model amd wrote a function for image generation